ORDER NO. AD9602027C2

Service Manual

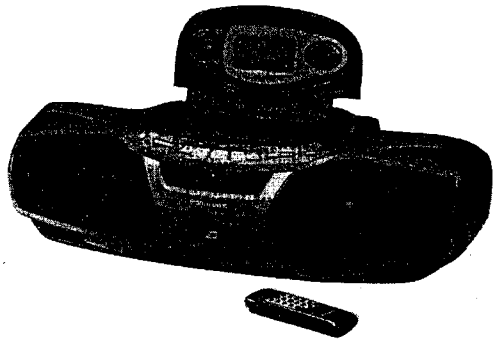
Portable Stereo CD System

Radio Cassette

RX-ED90

COMPACT disc DIGITAL AUDIO

MASH* multi - stage noise shaping



Colour

(K) : Black

Areas

Suffix for Model No.	Area	Colour
(EG)	Europe and Germany	(K)
(EB)	Britain	

Tape Deck: AR2 Mechanism Series
Traverse Deck: RAE0150Z Mechanism Series

■ Specifications

General:

Power Requirement	
AC	230 – 240 V, 50 Hz [for (EG) area]
	240 V, 50 Hz [for (EB) area]
Battery	15 V (Ten R20 / LR20, UM-1 batteries)
Memory Back-up for Computer / Clock	
	6 V (Four R6 / LR6, UM-3 batteries)
Power Consumption	86 W (AC only)
Power Output	30 W (15 W×2) (DIN)
	100 W (PMPO)
Speakers	Woofer:10 cm PM Dynamic speaker, 6 Ω
	Mid-range: 8 cm PM Dynamic speaker, 8 Ω
	Tweeter: 2 cm Ceramic speaker
Jacks	
Output	PHONES: 32 Ω, Ø3.5
	LINE OUT: 316 mV, 4.7 kΩ, Ø3.5
Input	MIX MIC: 5 mV, 200-600Ω, Ø3.5
	LINE IN: 316 mV, 47 kΩ, Ø3.5
Dimensions:	650 (W) × 187 (H) × 292 (D) mm
	(Top panel closed)
Weight:	7.0 kg without batteries

CD Player:

Sampling Frequency:	44.1 kHz
Decoding:	16-bit linear
Beam Source:	Semiconductor laser
	(wavelength: 780 nm)
No. of Channels:	2 channels, stereo
Wow and Flutter:	Less than possible measurement data
D/A Converter:	MASH (1 bit DAC)

Radio :

Frequency Range:	
FM	87.5 – 108.0 MHz (50 kHz steps)
LW	144 – 288 kHz (9 kHz steps)
MW	522 – 1611 kHz (9 kHz steps)
Intermediate Frequency:	
FM	10.7 MHz
LW/MW	459 kHz
Sensitivity:	
FM	2.8 μV/ 0.5 mW H.P. output
	(-3 dB Limit Sens.)
LW	100 μV/m/ 0.5 mW H.P. output (Max.)
MW	89 μV/m/ 0.5 mW H.P. output (Max.)

Tape Recorder :

Track System:	4-track, 2-channel, stereo recording and playback
Monitor System:	Variable sound monitor
Frequency Range:	
Normal	30 – 16000 Hz
CrO_2	30 – 17000 Hz
Recording System:	AC bias, AC erase
Tape Speed:	4.8 cm/s

***MASH is a trademark of NTT.**

Notes:
1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

⚠WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

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CAUTION:
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

■ Precaution of Laser Diode

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nm
Maximum output radiation power from pick up: 100 μW/VDE

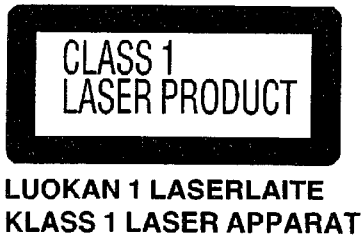
Laser radiation from the pick up unit is safety level, but be sure the followings:

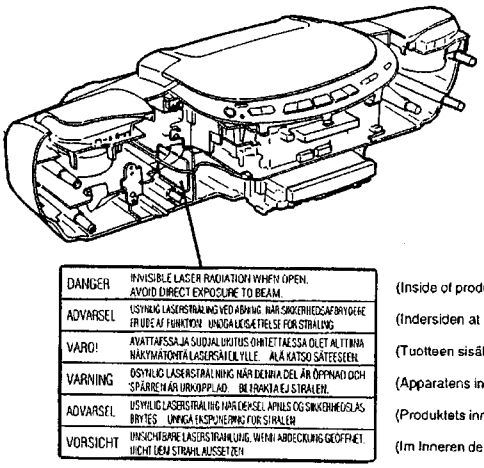
1. Do not disassemble the pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pick up unit. It was already adjusted.
3. Do not lock at the focus lens using optical instruments.
4. Recommend not to lock at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit adgestrahit.
Wellenlänge: 780 nm
Maximale strahlungsleistung der laserinhelt: 100 μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.





■ Caution for AC Main Lead

[(EB) area code model only]

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ⓐ or the BSI mark ♡ on the body of the fuse.

If the plug contains a removable fuse.cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFETY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

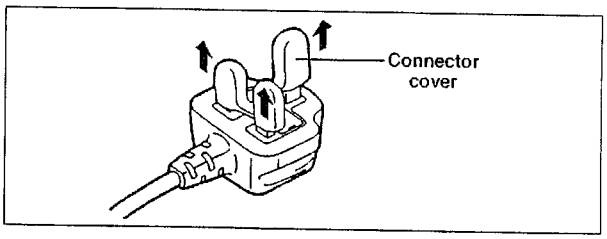
This apparatus was produced to BS 800.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚ .

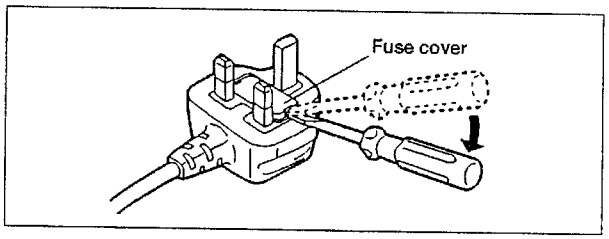
Before use

Removal the connector cover as follows.

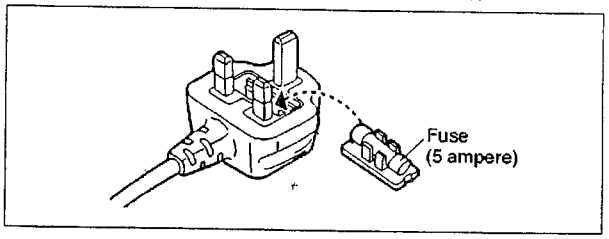


How to replace the fuse

1. Remove the fuse cover with a screwdriver.



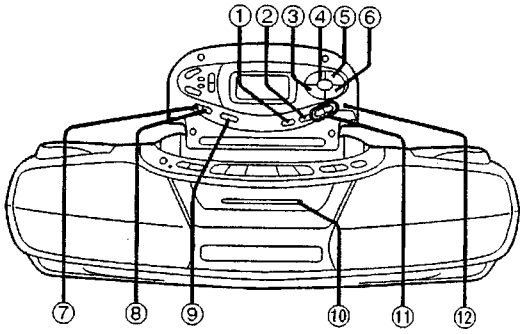
2. Replace the fuse and attach the fuse cover.

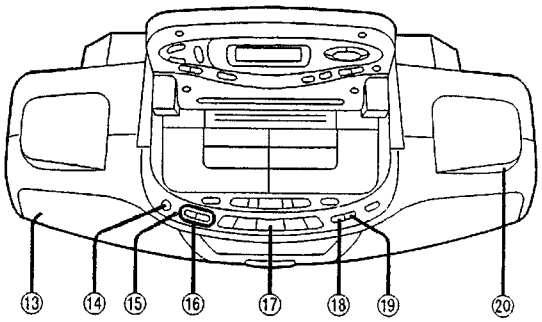


■ Location of Controls

Basic/Tuner controls

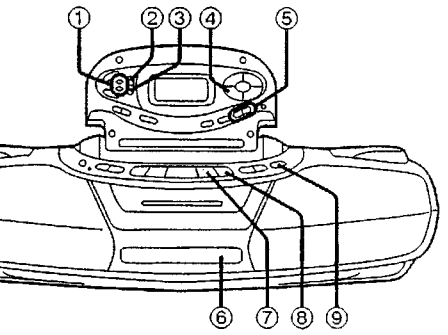
① Auxiality input button (AUX)
② Timer button (TIMER)
③ Memory button [MEMORY (TUNER/CD)]
④ Timer time adjust button (TIMER ADJUST)
⑤ Clock time adjust button (CLOCK ADJUST)
⑥ Tuning mode button (TUNE MODE)
⑦ Preset equalizer button (PRESET EQ)
⑧ S-XBS button (S-XBS)
⑨ Spatializer/Sound LED Demo button
(•SPATIALIZER / ▬ DEMO)
⑩ Sound LED
⑪ Time set/Tuning buttons
(CD/TUNE/TIME SET ▶▶|/+, |◀◀/−)
⑫ Preset tuning indicator (PRESET TUNE)
⑬ Speakers (Woofer/Tweeter) (10 cm, 6 Ω / 2 cm)
⑭ Power "STDBY ⏻ (AC)/ON" switch
[POWER/BATT, STDBY ⏻ (AC)/ON]
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
⑮ Power/battery check/standby indicator
[POWER/BATT, STDBY ⏻ (AC)/ON]
The indicator lights green when the unit is turned on.
When the AC power supply is used, it functions as an AC connection indicator. (The indicator colour changes to red when the unit is turned off.)
When the unit is operated on batteries, it functions as a battery check indicator.
⑯ Volume control buttons (VOLUME +, −)
⑰ Band select button (BAND)
⑱ Top panel close button (CLOSE)
⑲ Top panel open button (OPEN)
⑳ Shoulder top speaker (8 cm, 8 Ω)





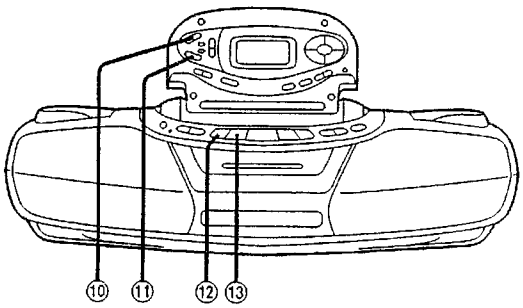
CD controls A

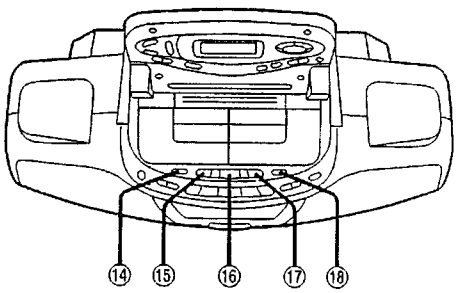
① CD recording mode indicator (AUTO, 1 TRAC)
② CD recording mode select button (CD REC MODE)
③ CD recording level select button (CD REC LEVEL)
④ Program button [MEMORY (TUNER/CD)]
⑤ Skip/Search buttons
(CD/TUNE/TIME SET ▶▶|/+, |◀◀/−)
⑥ CD tray
⑦ Play/pause button(▶/❚❚)
⑧ Stop/clear button (■/CLEAR)
⑨ CD tray open/close button (▲ CD OPEN/CLOSE)



Cassette deck controls B

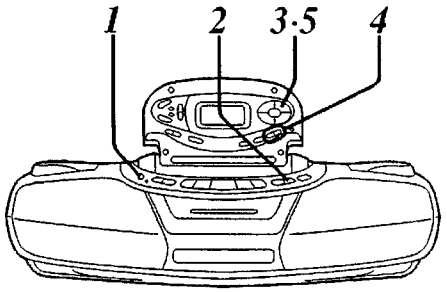
⑩ Rec/rec pause button (●/● ❚❚, REC/REC PAUSE)
⑪ Tape edit button (TAPE EDIT)
⑫ Tape stop button (■)
⑬ Tape play/direction button (◀ ▶)
⑭ Deck 1 tape eject button (DECK 1 ▲)
⑮ Rewind/TPS button (REW TPS)
⑯ Deck select button (DECK 1/2)
⑰ Fast forward/TPS button (FF TPS)
⑱ Deck 2 tape eject button (DECK 2 ▲)





■ Setting the Clock

The clock has a 24-hour display.



Example: Setting the clock to 16:20;

1 **Press POWER.**
(This turns the unit on.)

2 **Press TOP PANEL OPEN to open top panel.**

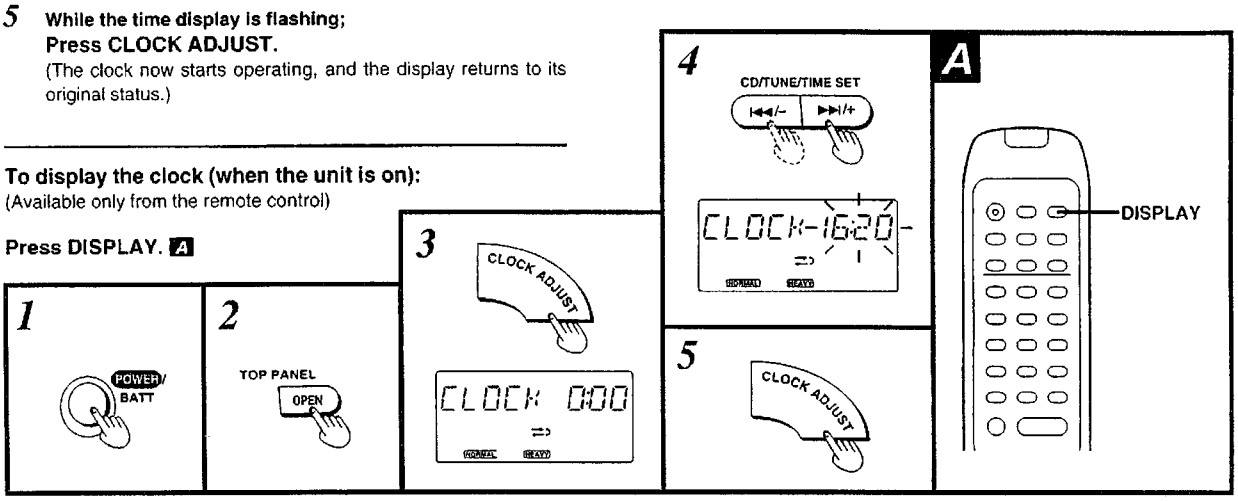
3 **Press CLOCK ADJUST.**

4 **Press ▶▶|/+ or |◀◀/– to show desired time.**
The time display can be changed in one minute units by tapping the buttons, and quickly by holding down the buttons.

5 **While the time display is flashing;**
Press CLOCK ADJUST.
(The clock now starts operating, and the display returns to its original status.)

To display the clock (when the unit is on):
(Available only from the remote control)

Press DISPLAY. A



■ Setting the Display

(Available only from the remote control) A
This operation comes in handy to check the present time during play or the tape counter display during recording.

Press DISPLAY.
Play status→Present time→Tape counter
(CD/Radio)

(The display changes each time the button is pressed.)
"----" appears on the tape counter display when a tape has not been loaded.

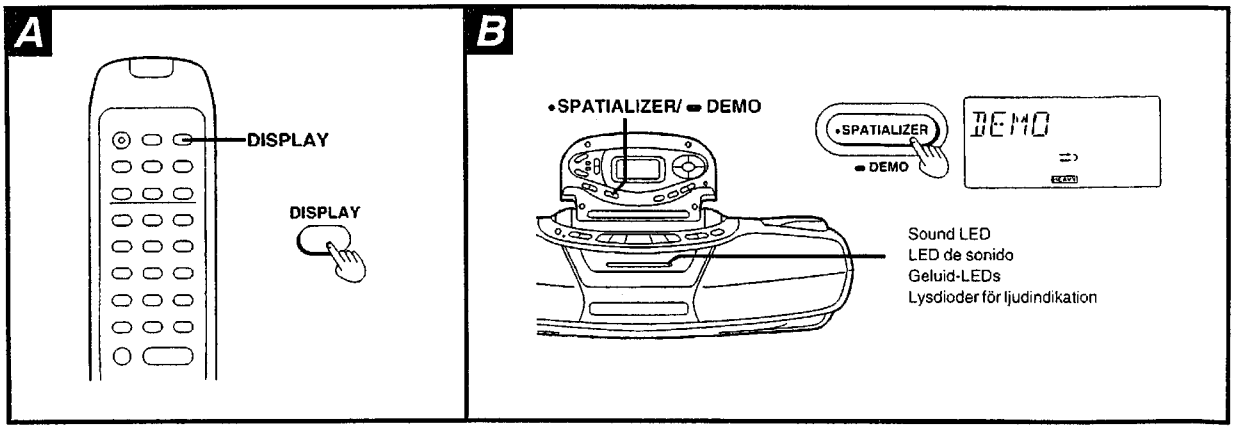
Sound LEDs

These LEDs light and flash in various ways according to the operation of this unit and in conjunction with the music.

Using the demo display function:
(Main unit only) B

Press •SPATIALIZER/ ▬ DEMO for at least two seconds, and then release once "DEMO" is displayed.

Press any button to turn off the demo display function.



■ Using Sound-space Effect (SPATIALIZER)

Using sound-space effects (SPATIALIZER)

With its shoulder-top speakers, this unit allows you to listen to music with a three-dimensional feel. Using the SPATIALIZER allows you to give the music an even greater depth and breadth. Compared to conventional surround sund, this system provides greater stability in the midrange (vocals and instruments). The SPATIALIZER sound can also be recorded on tape.

SPATIALIZER playback and recording

Press •SPATIALIZER so that the SPATIALIZER indicator lights, and then begin playback and recording.

Turning off the SPATIALIZER effect
Press •SPATIALIZER so that the SPATIALIZER indicator turns off.

The SPATIALIZER effect

Normal stereo A

Conventional surround sound B
Although the sound is broader, the sound positioning is not stable.

SPATIALIZER C
The sound has a broad feel, and the positions of the vocals, instruments, etc., are very stable.

Notes

- **Recording monaural audio**
  If the SPATIALIZER is turned on, the sound may be off balance to either the right or the left. Turn the SPATIALIZER off.
- **Dubbing tapes**
  The SPATIALIZER effect cannot be turned on while dubbing tapes.
- **Turning on the SPATIALIZER effect while playing back a tape that was already recorded with the SPATIALIZER effect**
  This will emphasize the effect. If the effect is too strong, turn it off.
- **When listening through headphones**
  The SPATIALIZER effect will be less pronounced than when listening through speakers.

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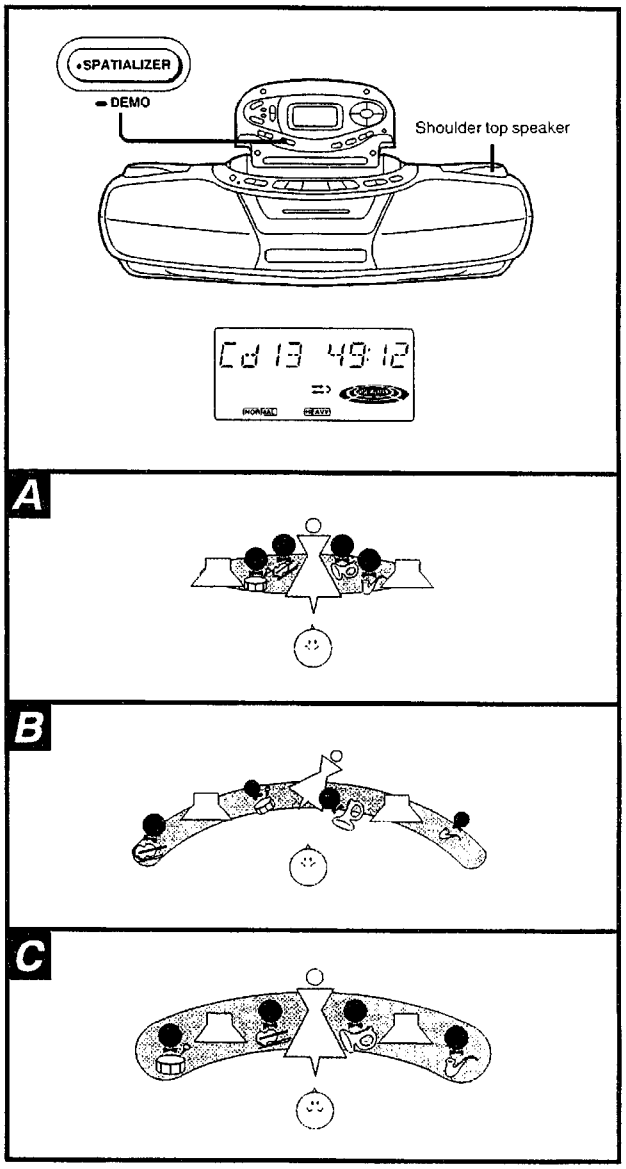


■ Self-Diagnostic Function

Display procedure

Cassette tapes to have ready

- Cassette tape with erasure-prevention tab removed on one side only (A or B)
- Music cassette tape with erasure-prevention tabs intact on both sides (A and B)

Note: In either case, rewind the cassette tape to near the middle.

To enter the self-diagnostic mode

1. Connect the unit to the power supply and turn the power on.
2. Set reverse mode to " ⇄ ". (Use the remote control attached to main unit, since the reverse mode cannot be set from the main unit.)
3. Check that there is no cassette tape in the tape compartment.
4. Hold down the tape deck stop button (□) for at least two seconds, and then keep pressing together with the tape deck FF/TPS button for another 2 seconds. "T" will then appear on the LCD display. (This indicates that the unit has switched from normal display mode to self-diagnostic mode.)

To view the display

- **To view the self-diagnostic display for tape decks 1 and 2:**

1. Load a cassette tape into tape deck 1 with the erasure-prevention tab removed on one side only (A or B).
2. Press the FF/TPS button, perform the fast-forward winding operation for about 5 seconds and then stop winding using the tape Stop button (□).
3. Remove the cassette tape, and load a music cassette (containing at least 4 seconds of music and both erasure-prevention tabs intact).
4. Press the Play button (◁I▷). When play begins, press either the FF/TPS button or the REW/TPS, and perform the TPS (tape program search) operation in the direction in which the music is recorded.
5. After TPS operation has completed (when the beginning of music is found and the unit switches back to play mode), stop the tape by pressing the Stop button(□).
6. Repeat steps 1-5 above for tape deck 2.
7. If an error is detected when the tape deck Stop button (□) is pressed, a self-diagnostic display appears on the LCD display. (If no error occurs, the LCD display shows the tape counter.)
   If there is more than one error, the error display changes each time the tape deck Stop button (□) is pressed.
   To change between the self-diagnostic display for tape deck 1 and tape deck 2, press the tape deck select button (DECK 1/2).

- **To view the self-diagnostic display for the CD player:**

1. Press the CD tray Open/Close button (⏏) to open the CD tray.
2. After the tray has been fully open for about 5 seconds, press the CD tray Open/Close button (⏏) again to close the CD tray.
3. Press the CD Stop button. (The unit will then enter CD mode.)
4. After about 5 seconds, press the tape Stop button (□). If there is an error, a self-diagnostic display appears on the LCD display. (If no error occurs, the LCD display shows the tape counter.)

Note: If this procedure is performed for tape decks 1 and 2 and the CD player and an error occurs for each, the LCD display alternates between the self-diagnostic codes for tape decks 1 and 2 and the CD player each time the tape deck Stop button (□) is pressed. (If there is no error, the LCD display shows the tape counter.)

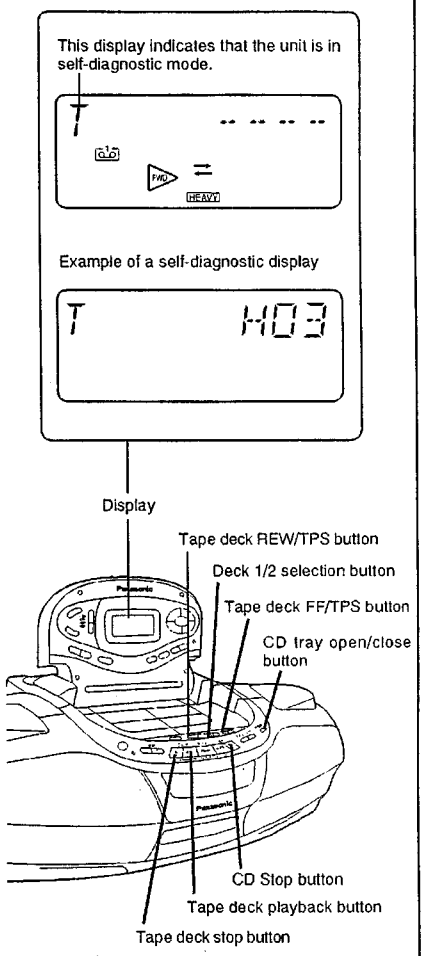
To return to normal display mode

- Press the power switch once to turn the power off, then press it again to turn the power back on. To view the self-diagnostic display once again, perform steps 1 to 4 of "Entering self-diagnostic mode" above, then press the tape Stop button (□).

Clearing the self-diagnostic memory

- The self-diagnostic error code is stored in memory. To clear memory, first correct the error, and then remove the batteries (including the clock/memory battery) and disconnect the AC power supply. Then, press and hold down the power supply button for at least 5 seconds.
- Always be sure to clear memory after an error has been corrected.

Display location


This display indicates that the unit is in self-diagnostic mode.
Example of a self-diagnostic display
H03
Display
Tape deck REW/TPS button
Deck 1/2 selection button
Tape deck FF/TPS button
CD tray open/close button
CD Stop button
Tape deck playback button
Tape deck stop button

Display content

Note: Items marked with (*) are automatically displayed, and do not require the procedure described in the section "Viewing the display."

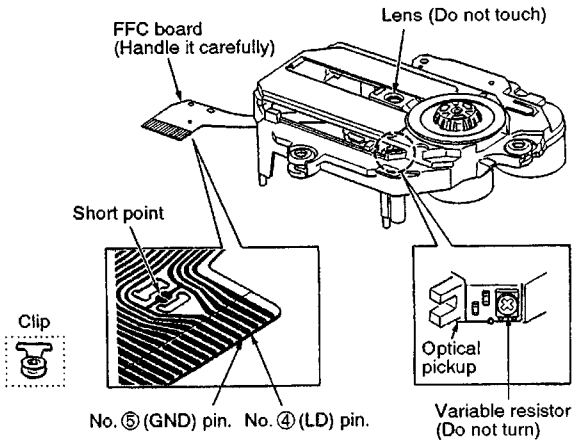
Display code	Symptom or condition	Cause and method of correction
* U01	When operating on batteries, power goes off immediately after being turned on.	The batteries are depleted. Replace with new batteries.
* U02	Power cannot be switched on.	Check the power cord (AC) or insert fresh batteries.
H01	Cassette deck does not operate correctly.	Faulty cassette deck mechanism mode detection switch (Deck 1: S951, Deck 2: S971) and plunger. (Check and replace)
H02	Unit does not record, or the unit goes into recording mode even when the erasure-prevention tabs have been removed from the cassette.	Faulty erasure-prevention tab detection switch (S974, S975) or short-circuit. (Check and replace)
H03	Tape does not play, even when the tape deck play button is pressed. The motor operates when the tape deck play button is pressed, even when no cassette is loaded in the deck.	Faulty tape detection switch (Deck 1: S952, Deck 2 : S972) or short-circuit. (Check and replace)
H15	The CD tray closes immediately after it is opened.	Faulty contact in the CD tray open detection switch (S790). (Check and replace)
H16	The CD tray opens immediately after it is closed.	Faulty contact of the CD tray close detection switch (S791). (Check and replace)
F01	When the tape Play button is pressed, the tape advances only slightly and then stops.	Reel pulse error. (Faulty Hall IC) (Check and replace)
F02	TPS (tape program search) does not work.	Faulty TPS signal detection or faulty plunger control. (Check and replace mechanism control IC)
F15	When the CD Play button is pressed when either the power is off, or from some function other than CD, it takes excessive time (5 seconds or more) for the CD to play.	Faulty traverse inner circumference position detection switch (S701). (Check and replace)
* F26	When the CD operation mode is selected by pressing the CD Stop button (□/CLEAR), "F26" is shown on the LCD display, and a CD does not play even when it has been loaded.	Communication error between servo-processor IC and microprocessor IC.
F75	When a CD is loaded, "NO DISC" is displayed and the CD does not play.	Faulty CD circuit power supply. (Faulty power supply IC or CD circuit power supply system.) (Check and replace) Flexible circuit board has become disconnected or broken wiring. (Check and replace) Faulty servo-processor IC. (Check and replace)

■ Handing Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) mey break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pockup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To protect the laser diode against electrostatic breakdown, short the flexible board (FFC bpard) with a clip or similar object.
3. Take care not to apply excessive stress to the flexible board (FFC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

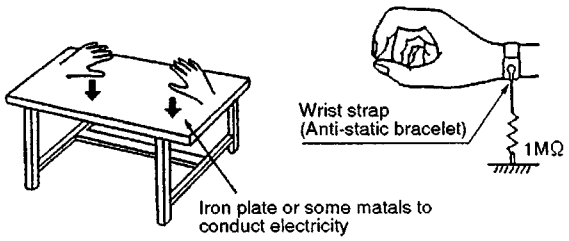


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conducive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



Caution when Replacing the Traverse Deck:

The traverse deck has a short point shorted with solder to protect the laser diode against electrostatic breakdown. Be sure to remove the solder from the short point before making connections.

Warning: This product uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

■ Operation Check and Main Component Replacement Procedures

NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

3. Select items from the following index when checks or replacement are required.

4. Illustrated screws are equivalent to actual size.

5. Refer the parts No. on the page of "Main Component Replacement Procedures", If necessary.

• Contents

• **Checking Procedure for each P.C.B.** Page.

1. Checking for the main P.C.B. and CD P.C.B.. ..... 9,10.
2. Checking for the tuner P.C.B.. ..... 11.
3. Checking for the LCD P.C.B.. ..... 11,12.

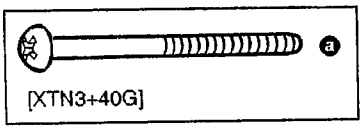
• **Main Component Replacement Procedures**

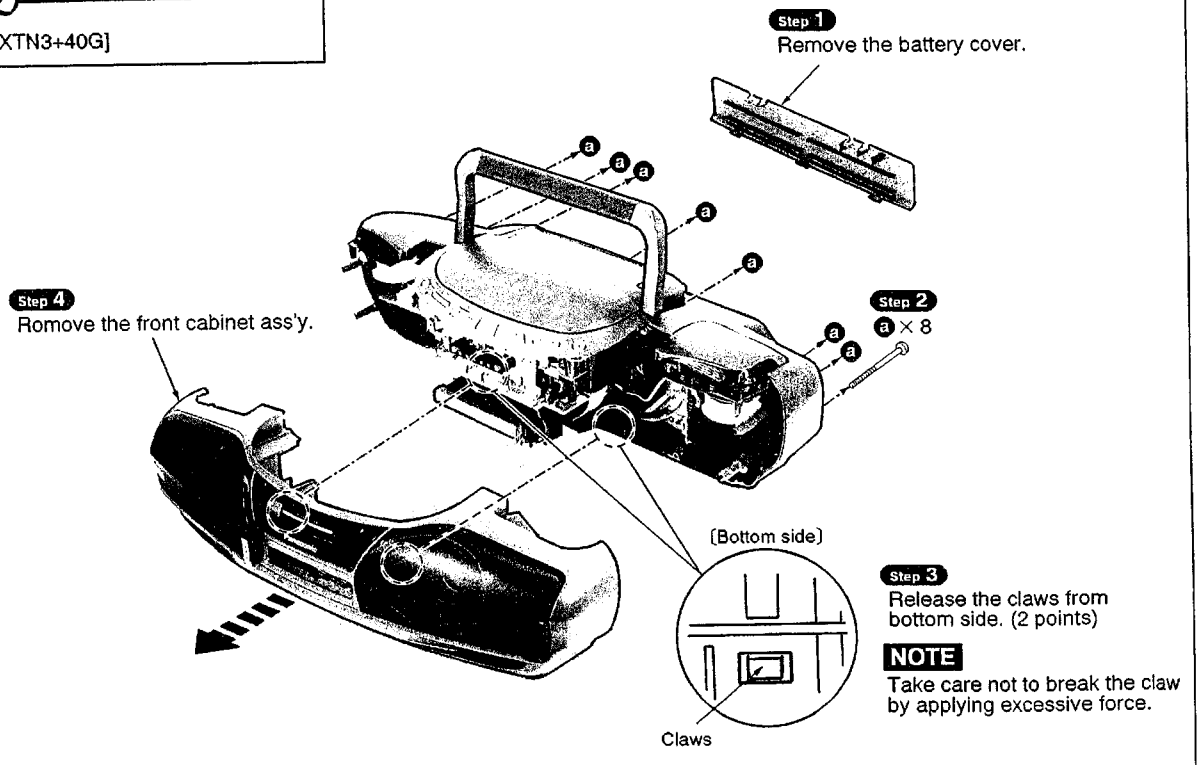
1. Replacement for the handle. ..... 13.
2. Replacement for the traverse deck. ..... 13~16.
3. Replacement for the belt, loading motor and loading switch. ..... 17.
4. Replacement for the power IC and regulator transistor. ..... 17,18.
5. Replacement for the motor ass'y. ..... 18,19.
6. Replacement for the pinch roller ass'y and head block. ..... 19,20.
7. Replacement for the DC motor ass'y, capstan belt A, capstan belt B and fast forward belt. ..... 20~23.
8. Replacement for the plunger ass'y and the parts mounted on mechanism P.C.B.. ..... 23,24.

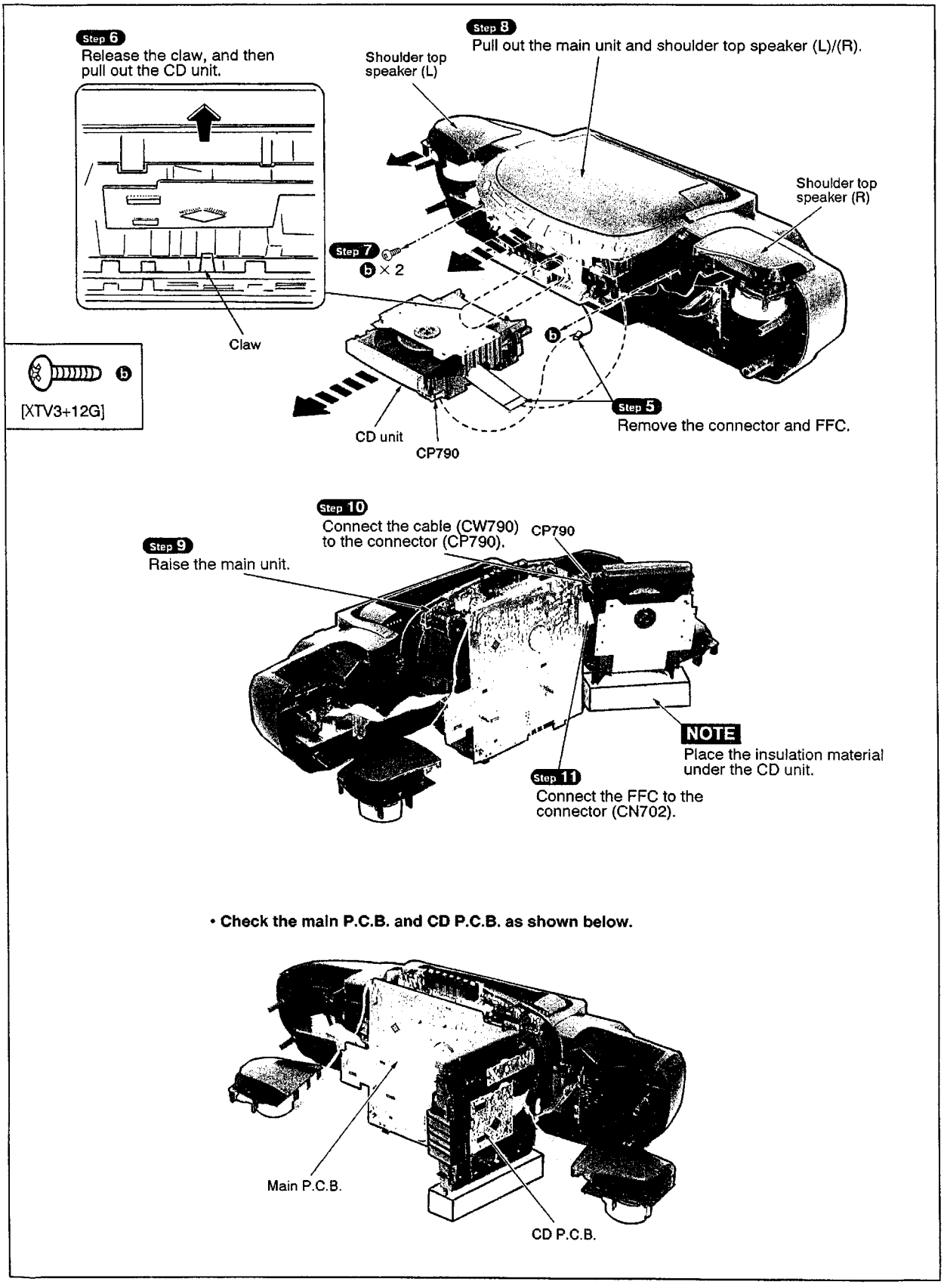
• **Measure for tape trouble** ..... 24.

■ Checking procedure for each P.C.B.

1. Checking for the main P.C.B. and CD P.C.B.

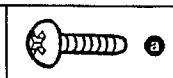






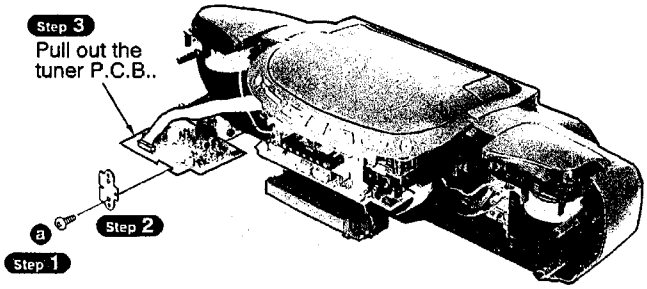
• Check the main P.C.B. and CD P.C.B. as shown below.

2. Checking for the tuner P.C.B.

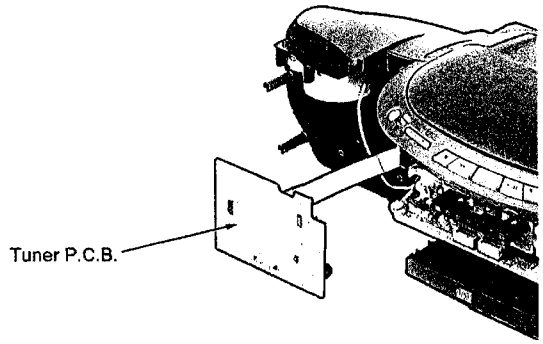


[XTV3+12G]

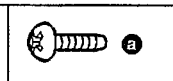
• Follow the item 1 (Step 1 ~ Step 4) in checking procedures for each P.C.B. on page 9.



• Check the tuner P.C.B. as shown below.

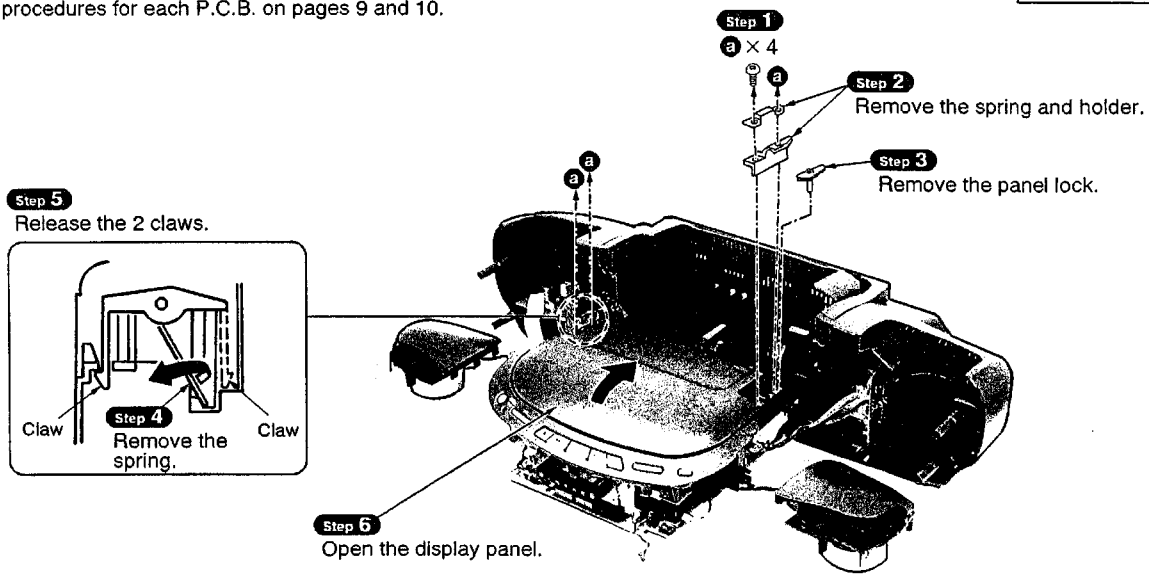


3. Checking for the LCD P.C.B.



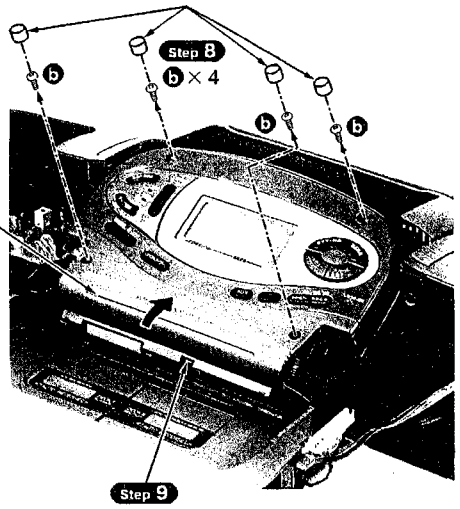
[XTV26+8G]

• Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10.



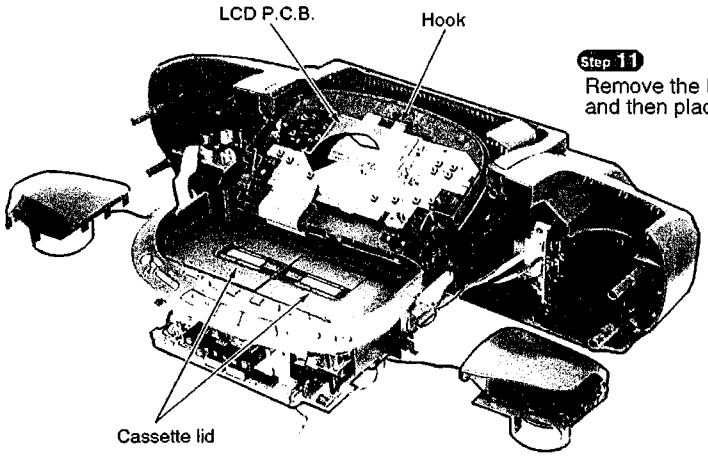
(b) (Black)
[XTN26+8GFZ]

Step 7 Remove the 4 rubbers.



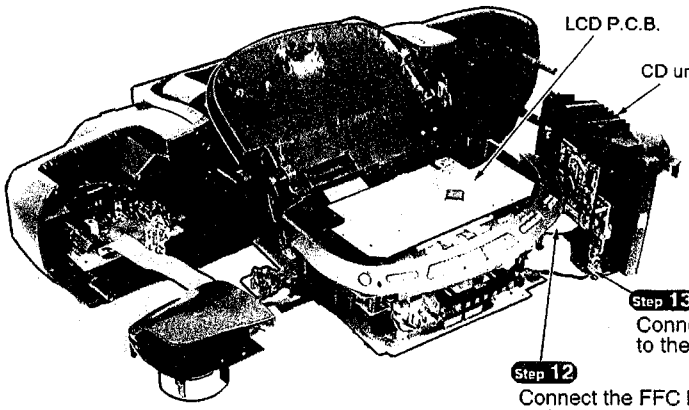
Step 10
Remove the front panel (Display).

Step 9
Release the claw.



Step 11
Remove the LCD P.C.B from the hook, and then place it on the cassette lid.

• **Check the LCD P.C.B. as shown below.**

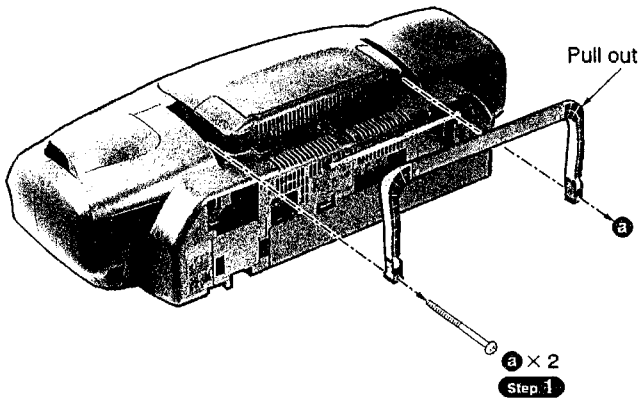


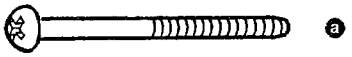
Step 13
Connect the cable (CW790) to the connector (CP790).

Step 12
Connect the FFC board to the connector (CP702).

■ Main Component Replacement Procedures

1. Replacement for the handle

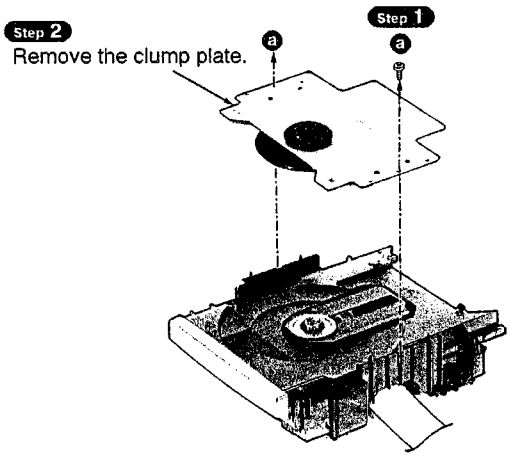




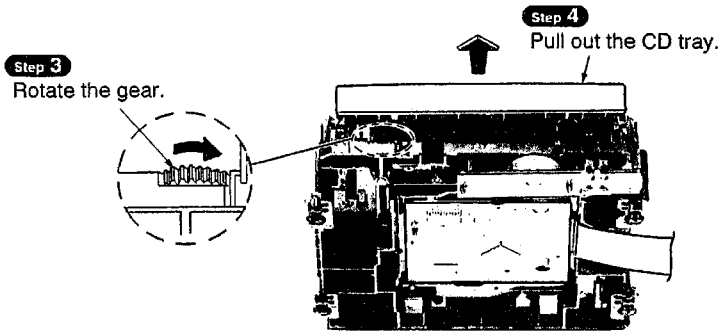
[XTN3+40G]

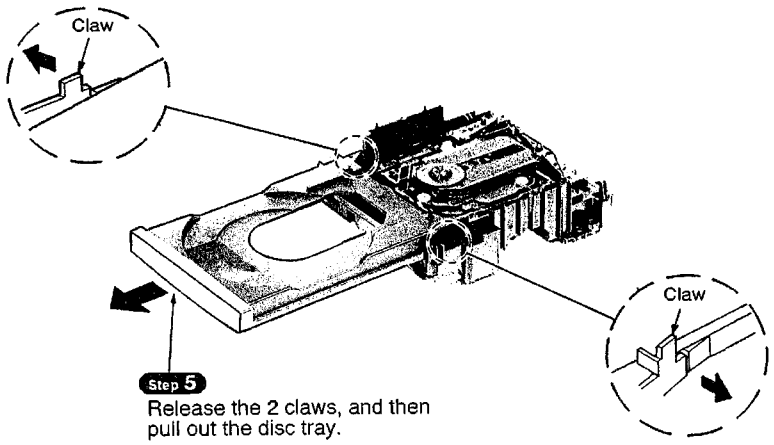
2. Replacement for the traverse deck

• Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 9 and 10.

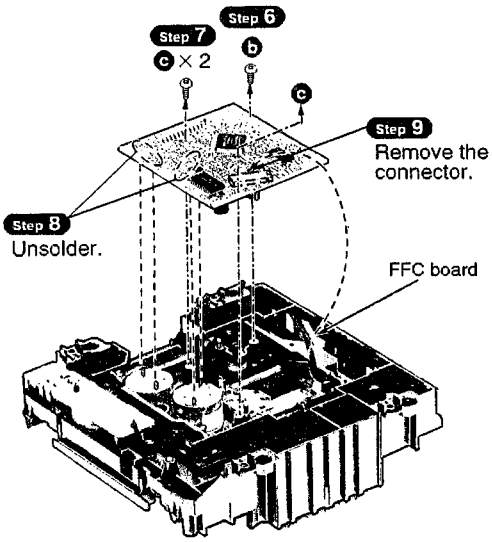


[XTN26+6G]

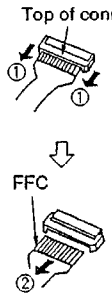




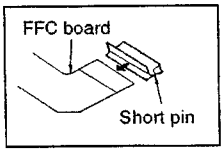
Step 5
Release the 2 claws, and then pull out the disc tray.



※Side the top of the connector in the direction of the arrow ① and disconnect of the FFC board in the direction of the arrow ②.

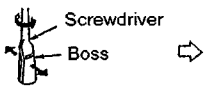


Caution:
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse Deck" on page 8.)

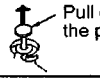


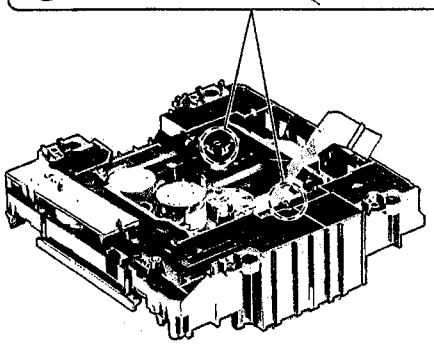
Step 10

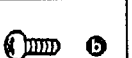
1. Widen the boss using a regular screwdriver.



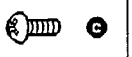
2. Pull out the pin in the direction of the arrow.



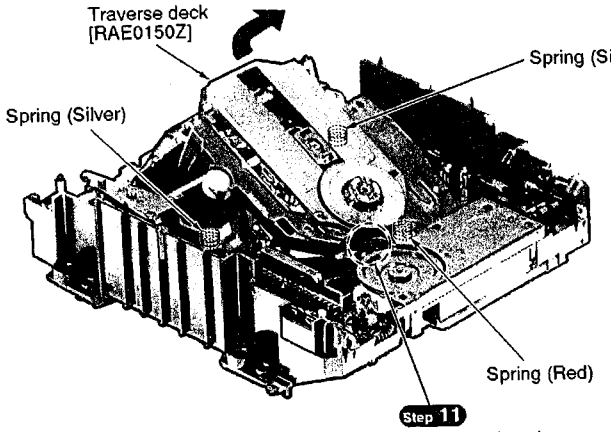




[XTV2+6G]



[XTV2+6G]

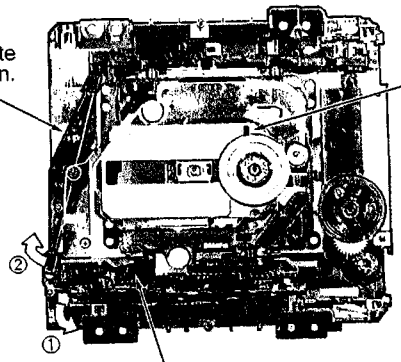


NOTE
Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck.

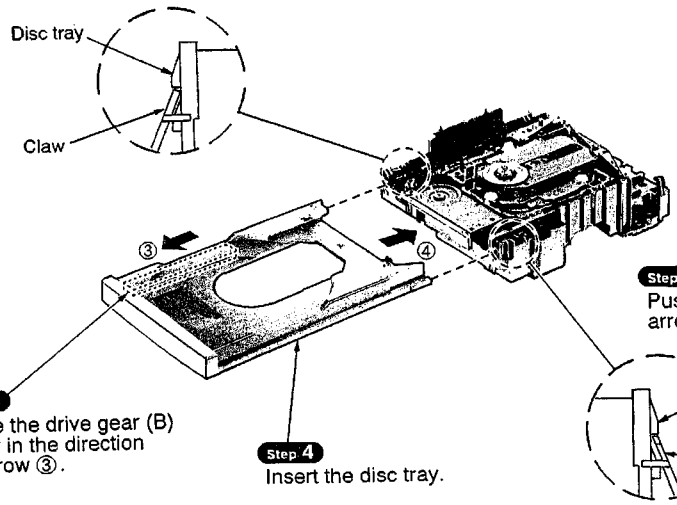
Step 11
Release the claw.

Installation of the disc tray after replacement

Step 2
Operate the lever, and then locate the traverse deck to "UP" position.



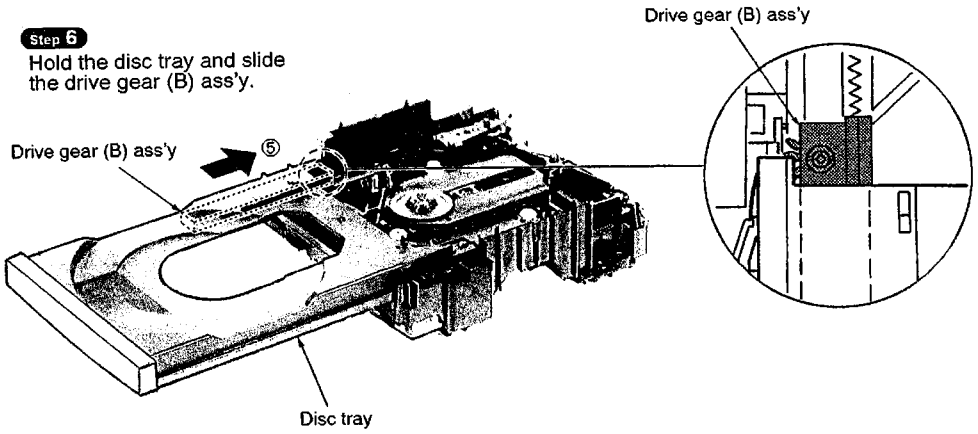
Step 1
Release the lock lever.

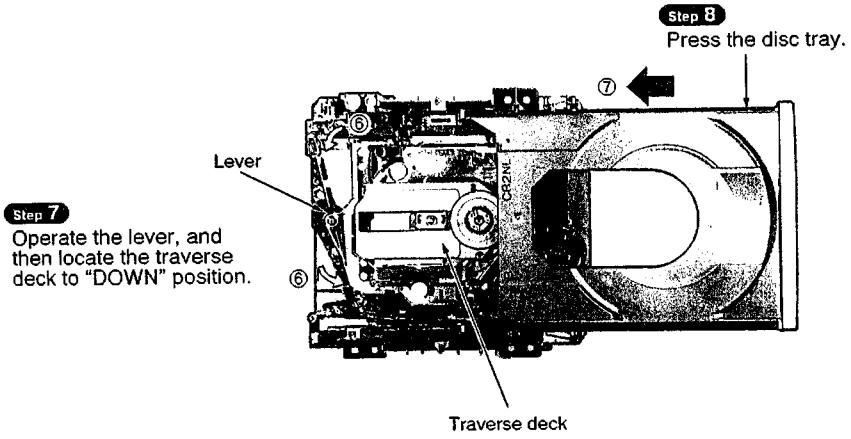


Step 5
Push the disc tray in the direction of arrow ④ until the claws are latched.

Step 3
Move the drive gear (B) ass'y in the direction of arrow ③.

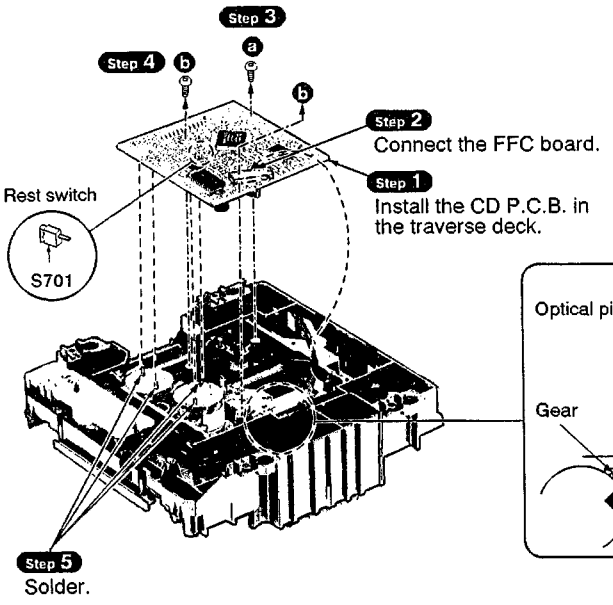
Step 4
Insert the disc tray.





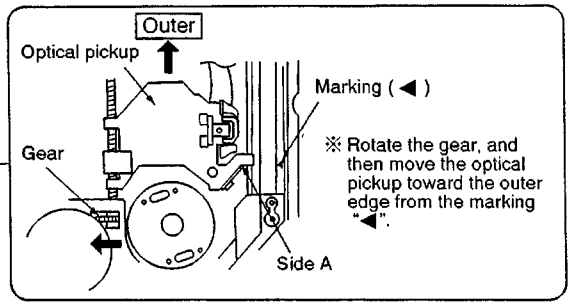
Installation of the CD P.C.B. after replacement

ⓐ [XTN2+6G]
ⓑ [XTV2+6G]



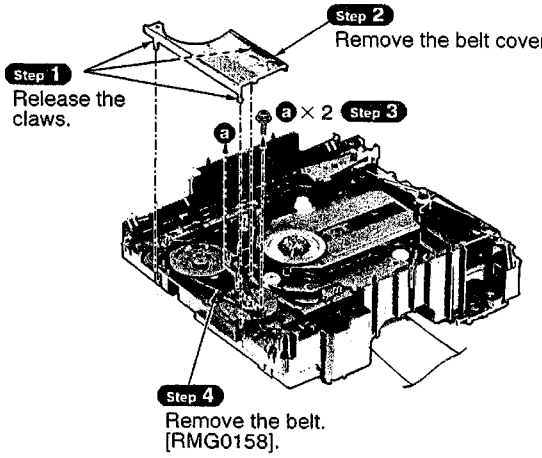
NOTE

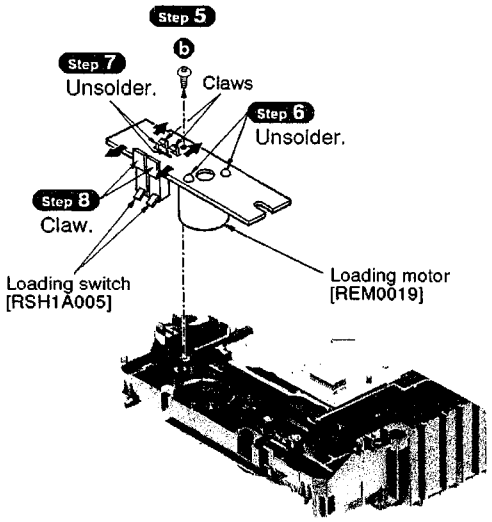
Before installing the CD P.C.B., move the optical pickup toward the outer edge from the mark "▼". [Otherwise, the rest detect switch (S701) mounted on the CD P.C.B. may be damaged.]


Outer
Optical pickup
Marking (◀)
Gear
※ Rotate the gear, and then move the optical pickup toward the outer edge from the marking "◀".
Side A

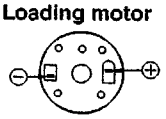
3. Replacement for the belt, loading motor and loading switch

- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 9 and 10.
- Follow the item 2 (Step 1 ~ Step 6) in main component procedures on pages 13 and 14.





Loading motor

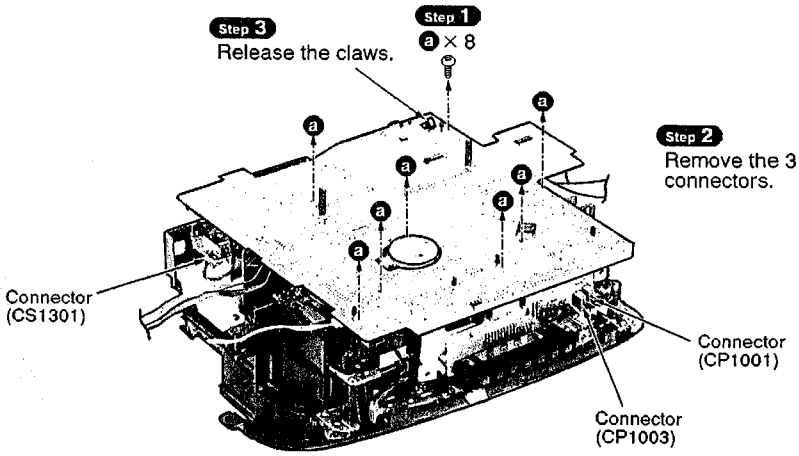


a [XYN2+F6FZ]

b [XTN26+6G]

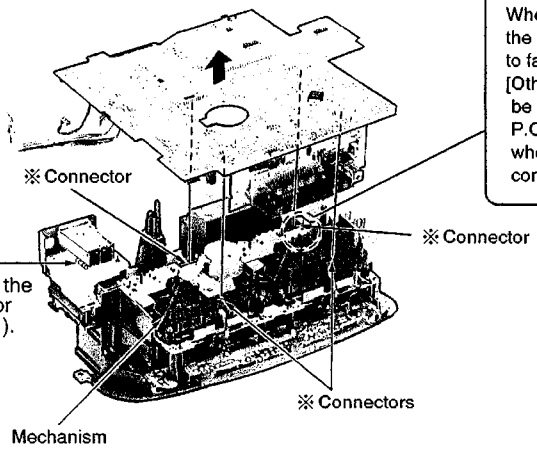
4. Replacement for the power IC and regulator transistor

- Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10.



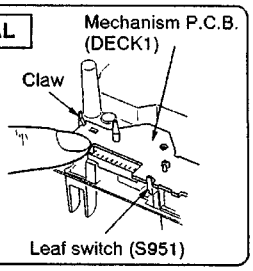
a [XTBS26+10J]

Step 5
Lift the main P.C.B. in the direction of arrow.
(※Be careful to remove the main P.C.B. because the mechanism is connected to 4 connectors.)

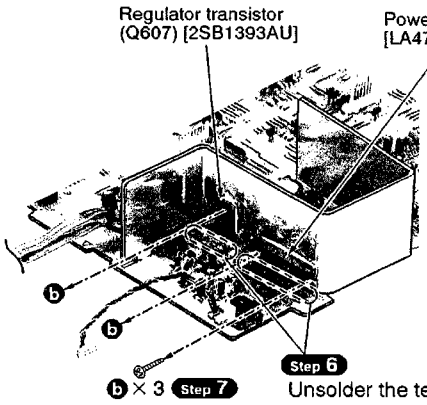


NOTE FOR MAIN P.C.B. REMOVAL

When removing the main P.C.B., press the mechanism P.C.B. with finger not to fall free. (Refer to figure right)
[Otherwise, the leaf switch (S951) may be damaged because the mechanism P.C.B. is removed at the same time when removing the mechanism P.C.B. connector.]



[XTV3+10F]

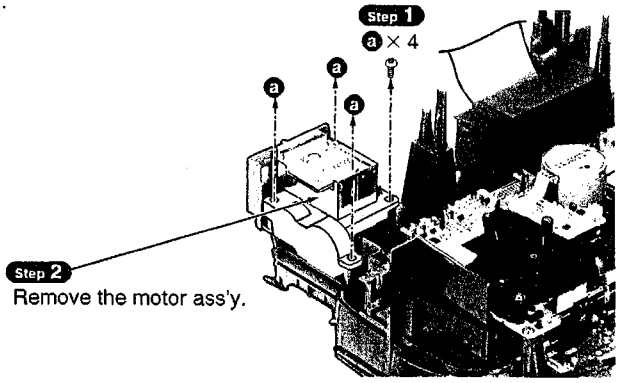


NOTE

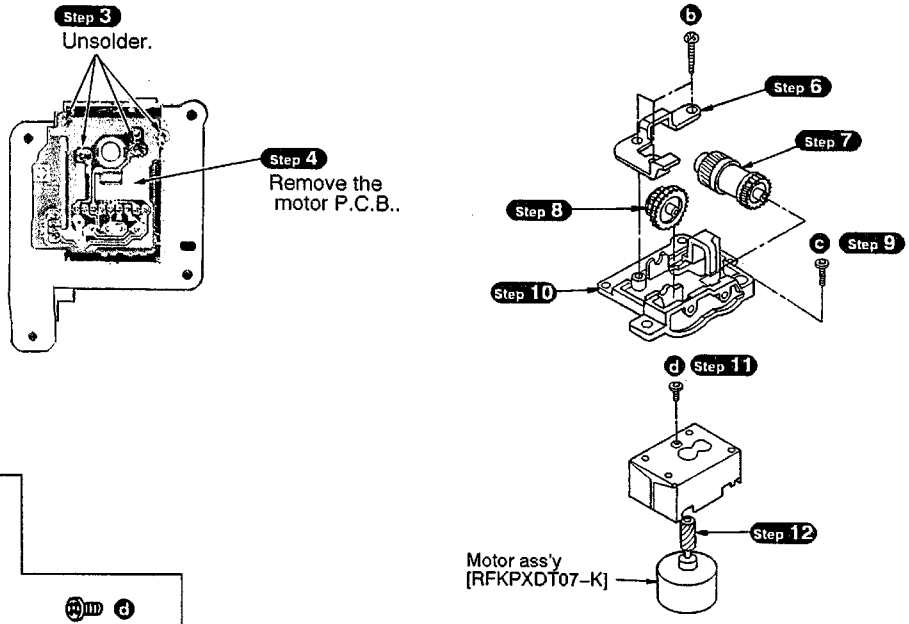
1. When mounting the power IC or regulator transistor, apply silicone compound (RFKX0002) to the rear side of power IC or regulator transistors.
2. Tighten enough the screws (ⓑ) after replacing the power IC and regulator transistor.

5. Replacement for the motor ass'y

- Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10..
- Follow the item 4 (Step 1 ~ Step 4) in main component procedures on pages 17 and 18.



[XTV3+12G]



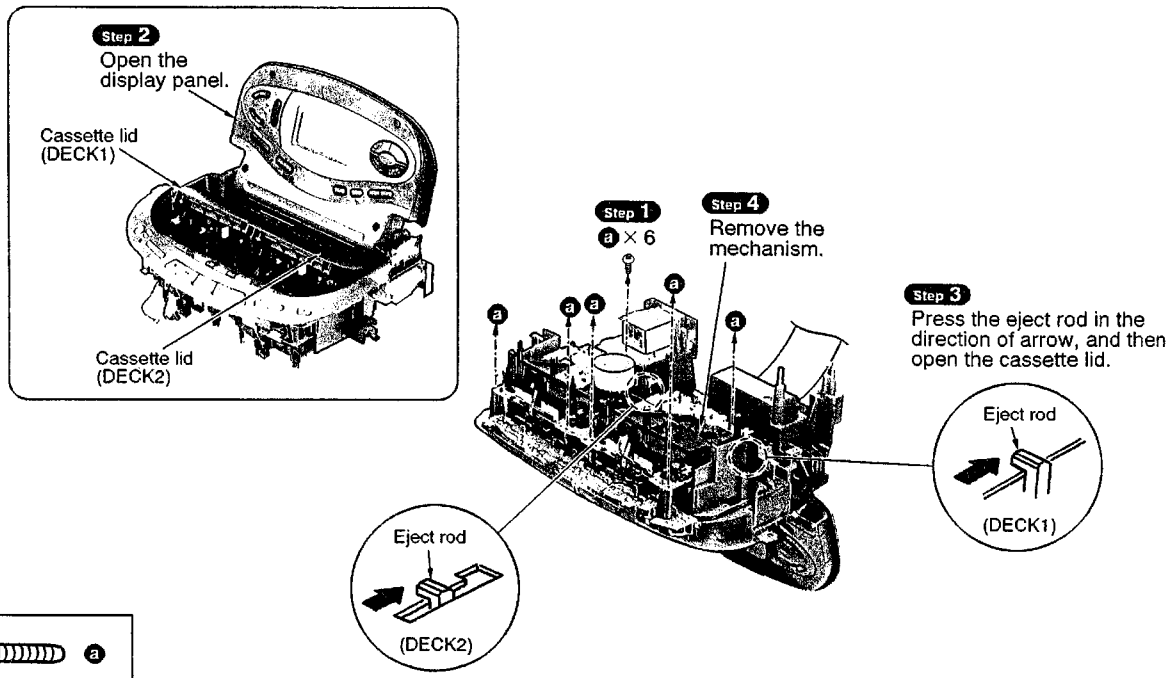
b [XTV26+12F]

c [XQN2+C6]

d [XQN2+C3]

6. Replacement for the pinch roller ass'y and head block

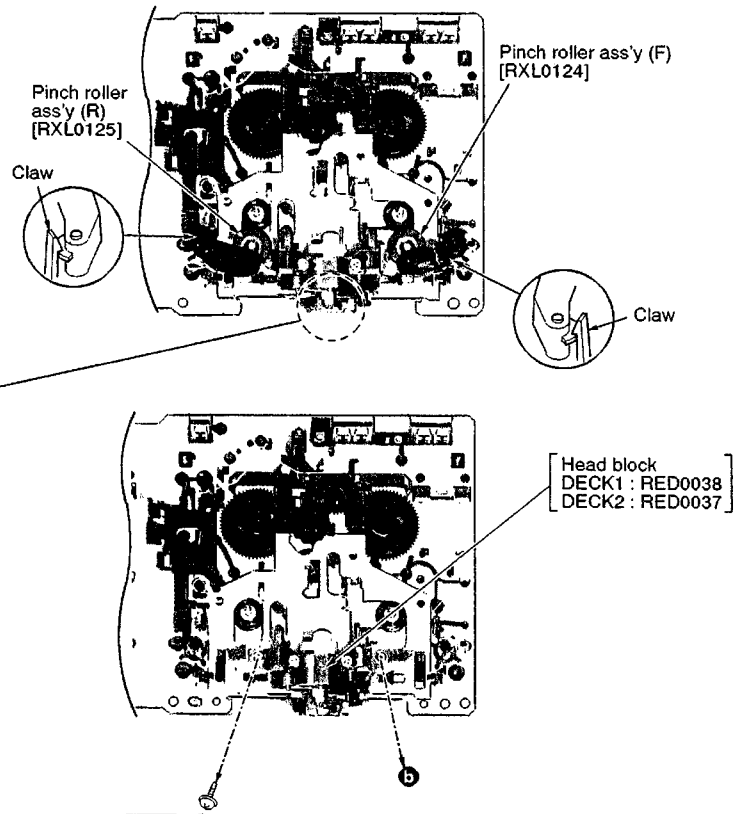
- Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10.
- Follow the item 4 (Step 1 ~ Step 4) in main component procedures on pages 17 and 18.



a [XTV3+12G]

※ The illustration below shows DECK2 mechanism.
For DECK1 mechanism, perform the same procedure as DECK2.

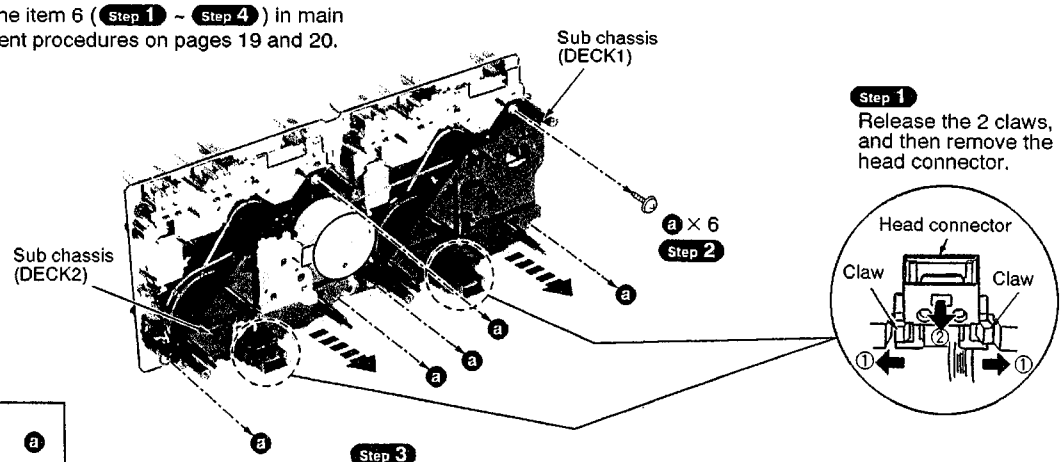
Step 5
Release the 2 claws, and then remove the pinch roller (R),(F).



ⓑ [XTW2+5L]

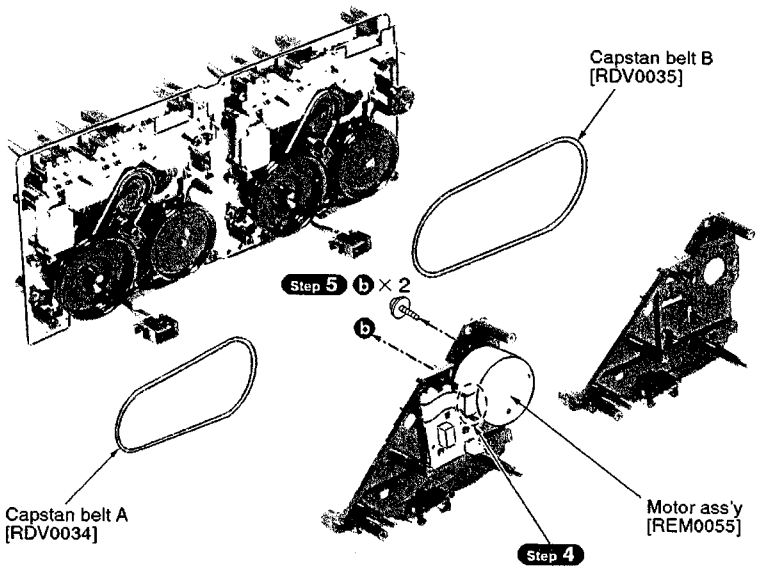
7. Replacement for the motor ass'y, capstan belt A, capsatan belt B and fast forward belt

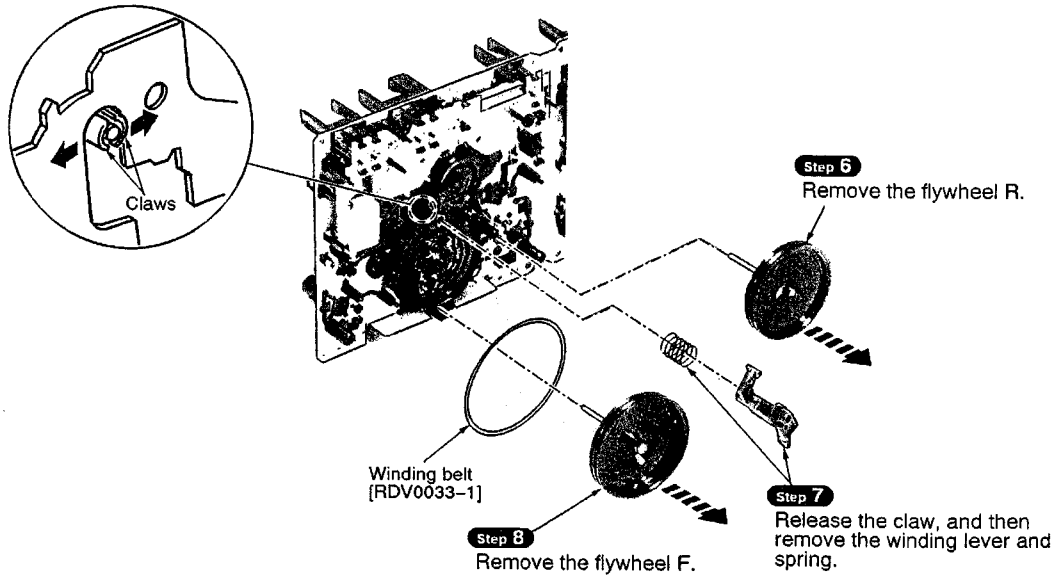
- Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10.
- Follow the item 4 (Step 1 ~ Step 4) in main component procedures on pages 17 and 18.
- Follow the item 6 (Step 1 ~ Step 4) in main component procedures on pages 19 and 20.



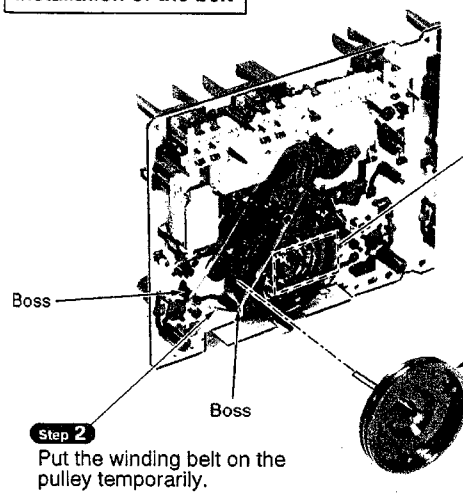
ⓐ [XTW26+10S]

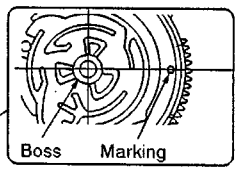
[RHD26022]


Capstan belt B
[RDV0035]
Step 5 ⓑ × 2
ⓑ
Capstan belt A
[RDV0034]
Motor ass'y
[REM0055]
Step 4
Unsolder the terminals. (4 points)


Claws
Step 6
Remove the flywheel R.
Winding belt
[RDV0033-1]
Step 7
Release the claw, and then remove the winding lever and spring.
Step 8
Remove the flywheel F.

Installation of the belt



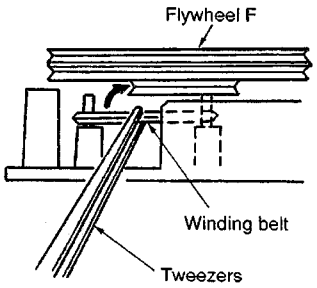


Step 1
The boss and marking should be positioned horizontally.

Step 2
Put the winding belt on the pulley temporarily.

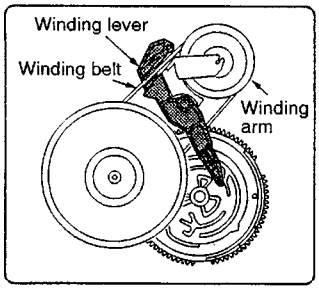
Step 3
Install the flywheel F.

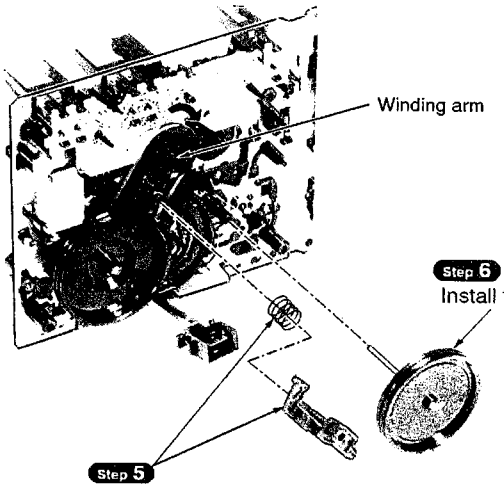
Step 4
Put the winding belt on the flywheel F.



NOTE
Take care not stick the grease on the belt.

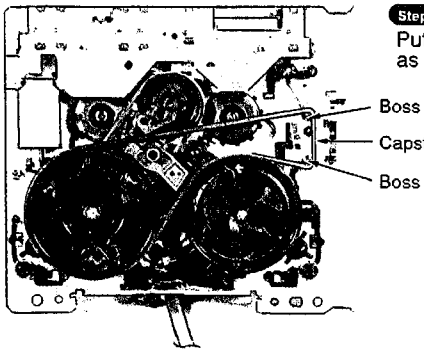
NOTE
The winding lever should be positioned as shown below.



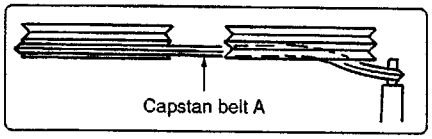


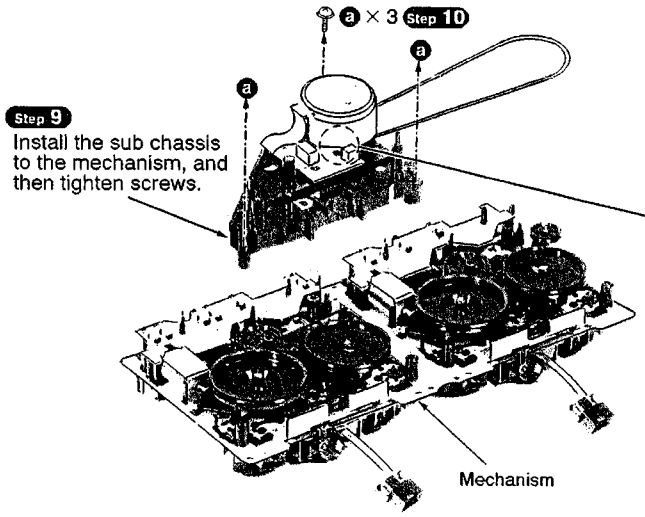
Step 5
Install the winding lever and spring while pressing the winding arm in the direction of arrow.
(The winding lever must be inserted completly and latched with claws.)

Step 6
Install the flywheel R.

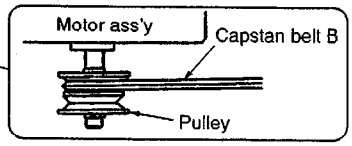


Step 7
Put the capstan belt A temporarily as shown below.

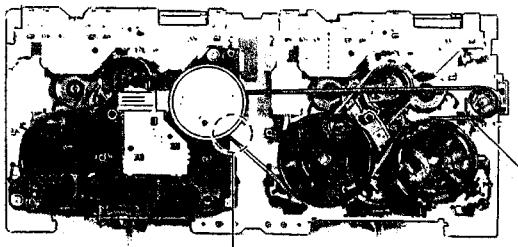




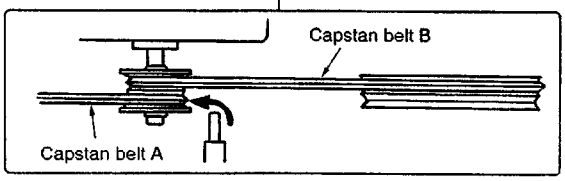
Step 8
Put the capstan belt B on the motor ass'y pulley.



ⓐ [XTW26+10S]



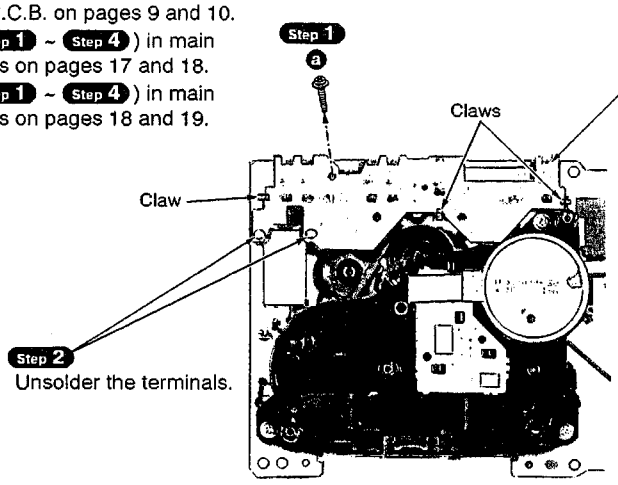
Step 11
Put the capstan belt B as shown left.



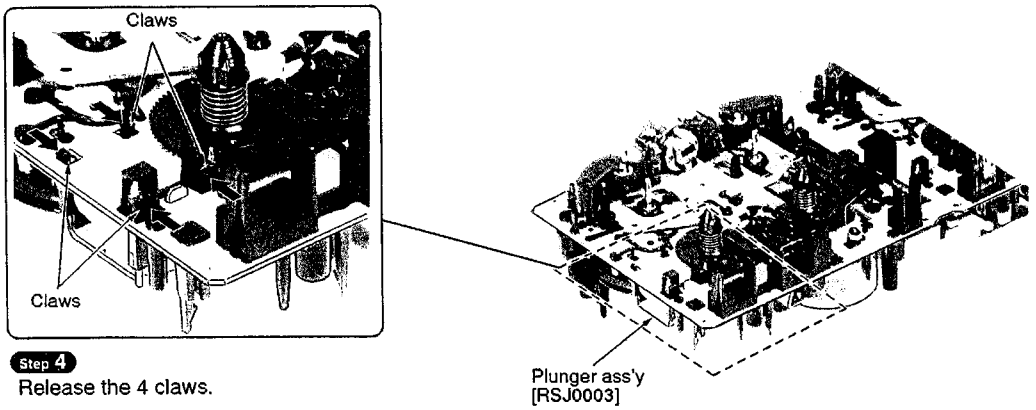
Step 12
Put the capstan belt A on the motor ass'y pulley.

8. Replacement for the plunger ass'y and the parts mounted on mechanism P.C.B.

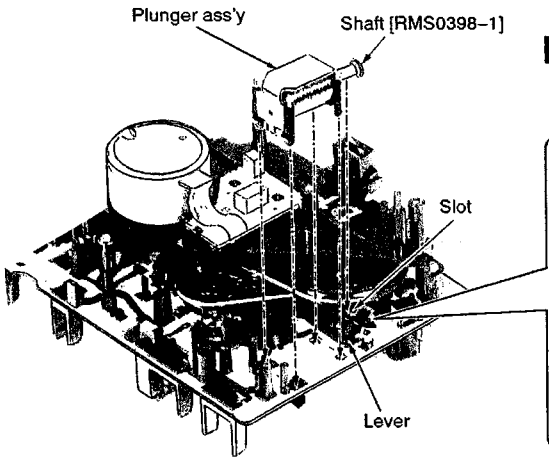
- Follow the item 1 (Step 1 ~ Step 8) in checking procedures for each P.C.B. on pages 9 and 10.
- Follow the item 4 (Step 1 ~ Step 4) in main component procedures on pages 17 and 18.
- Follow the item 5 (Step 1 ~ Step 4) in main component procedures on pages 18 and 19.



ⓐ [XYC2+JF17]



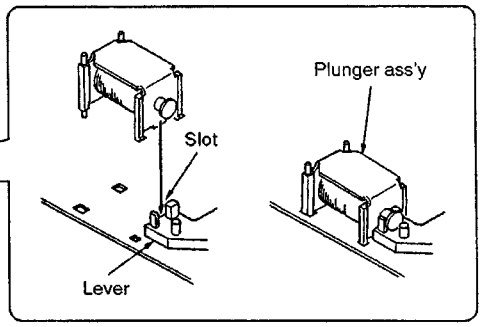
Step 4
Release the 4 claws.



NOTE

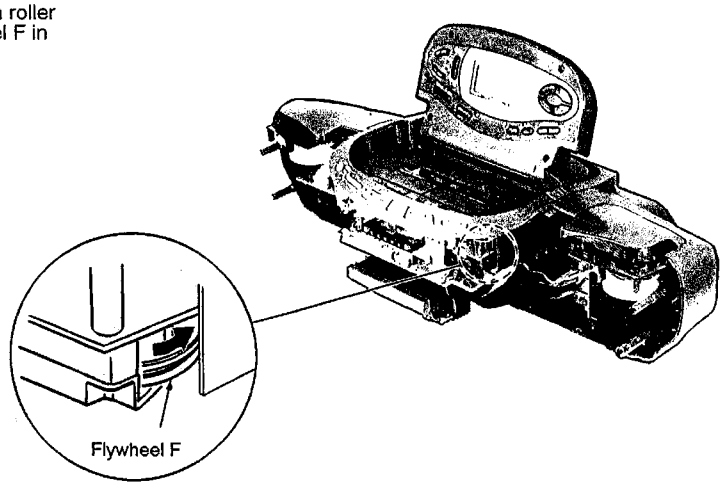
Notice for installing the plunger ass'y

- The shaft of plunger ass'y should be aligned with the slot of lever.



■ Measure for tape trouble

- If a cassette tape cannot be removed from the deck since the tape is caught by the capstan or pinch roller during playback or recording, rotate the flywheel F in the direction of the arrow to remove the tape.



■ Schematic Diagram

	Page
A CD circuit	26, 27
B Tuner circuit	28, 29
C LCD circuit	30
D Main circuit	
(1/2, deck circuit)	31, 32
(2/2, power amp circuit)	34~38
E Mechanism (DECK2) circuit	32
F Mechanism (DECK1) circuit	32
G Motor (Deck) circuit	32
H Loading motor circuit	33
I Motor (Top panel) circuit	33
J LED circuit	33
K Operation (1) circuit	33
L Operation (2) circuit	33
M Power supply circuit	38

Notes:

< CD circuit >
S701 : Rest switch.
< Loading motor circuit >
S790 : CD tray open detect switch.
S791 : CD tray close detect switch.
< LCD circuit >
S801 : S-XBS switch. (S-XBS)
S802 : Auxiliary input switch. (AUX)
S803 : Timer switch.(TIMER)
S804 : Skip/Search/Tuning/Time set switch.
(CD/TUNE/TIME SET ⏮/–)
S805 : Skip/Search/Tuning/Time set switch.
(CD/TUNE/TIME SET ⏭/+)
S806 : Memory/Program switch. [MEMORY (TUNER/CD)]
S807 : Clock time adjust switch. (CLOCK ADJUST)
S808 : Tuning mode switch.(TUNE MODE)
S809 : Rec/Rec pause switch. (●/●❚❚ ,REC/REC PAUSE)
S810 : Tape edit switch. (TAPE EDIT)
S811 : CD recording level select switch. (CD REC LEVEL)
S812 : CD recording mode select switch.(CD REC MODE)
S813 : Preset equalizer switch.(PRESET EQ)
S814 : Timer time adjust switch. (TIMER ADJUST)
S815 : Spatializer/Sound LED demo switch.
(● SPATIALIZER/ ▬ DEMO)
< Power supply circuit >
S901 : AC/DC select switch.
< Mechanism (DECK 1) circuit >
S951 : Mode detect switch.
S952 : Cassette tape detect switch.
S953 : CrO_2 tape detect switch.
< Mechanism (DECK 2) circuit >
S971 : Mode detect switch.
S972 : Cassette tape detect switch.
S973 : CrO_2 tape detect switch.
S974 : Reverse side record prevention tab detect switch.
S975 : Forward side record prevention tab detect switch.
< Motor (Deck) circuit >
VR981 : Tape speed adjustment VR.
< Operation (1) circuit >
S1011 : Power "STDBY⏻(AC)/ON" switch. [POWER/BATT, STDBY⏻(AC)/ON]
S1012 : DECK 1 tape eject switch. (DECK 1 ⏏)
S1013 : Rewind/TPS switch. (REW/ TPS)
S1014 : Deck select switch. (DECK 1/2)
S1015 : Tape forward /TPS switch. (FF/ TPS)
S1016 : DECK 2 tape eject switch. (DECK 2 ⏏)
S1017 : CD tray open/close switch.(⏏ CD OPEN/CLOSE)
< Operation (2) circuit >
S1002 : Volume control switch. (VOLUME –)
S1003 : Volume control switch. (VOLUME +)
S1004 : Tape stop switch. (■)
S1005 : Tape play/direction switch. (◀/▶)
S1006 : Band select switch. (BAND)
S1007 : Play/Pause switch. (▶/❚❚)
S1008 : Stop Clear switch. (■/CLEAR)
S1009 : Top panel close switch. (CLOSE)
S1010 : Top panel open switch. (OPEN)

• Battery current:

Vol. min...455 mA (FM)	Vol. max...1500 mA (FM)
455 mA (LW)	1860 mA (LW)
455 mA (MW)	1860 mA (MW)
550 mA (TAPE)	1870 mA (TAPE)
640 mA (CD)	2300 mA (CD)

Measurement instruction

MW/LW:	74 dB/m, 30% Mod.
FM:	60 dB, 30% Mod.
TAPE:	315 Hz, 0 dB
CD:	1 kHz, 0 dB

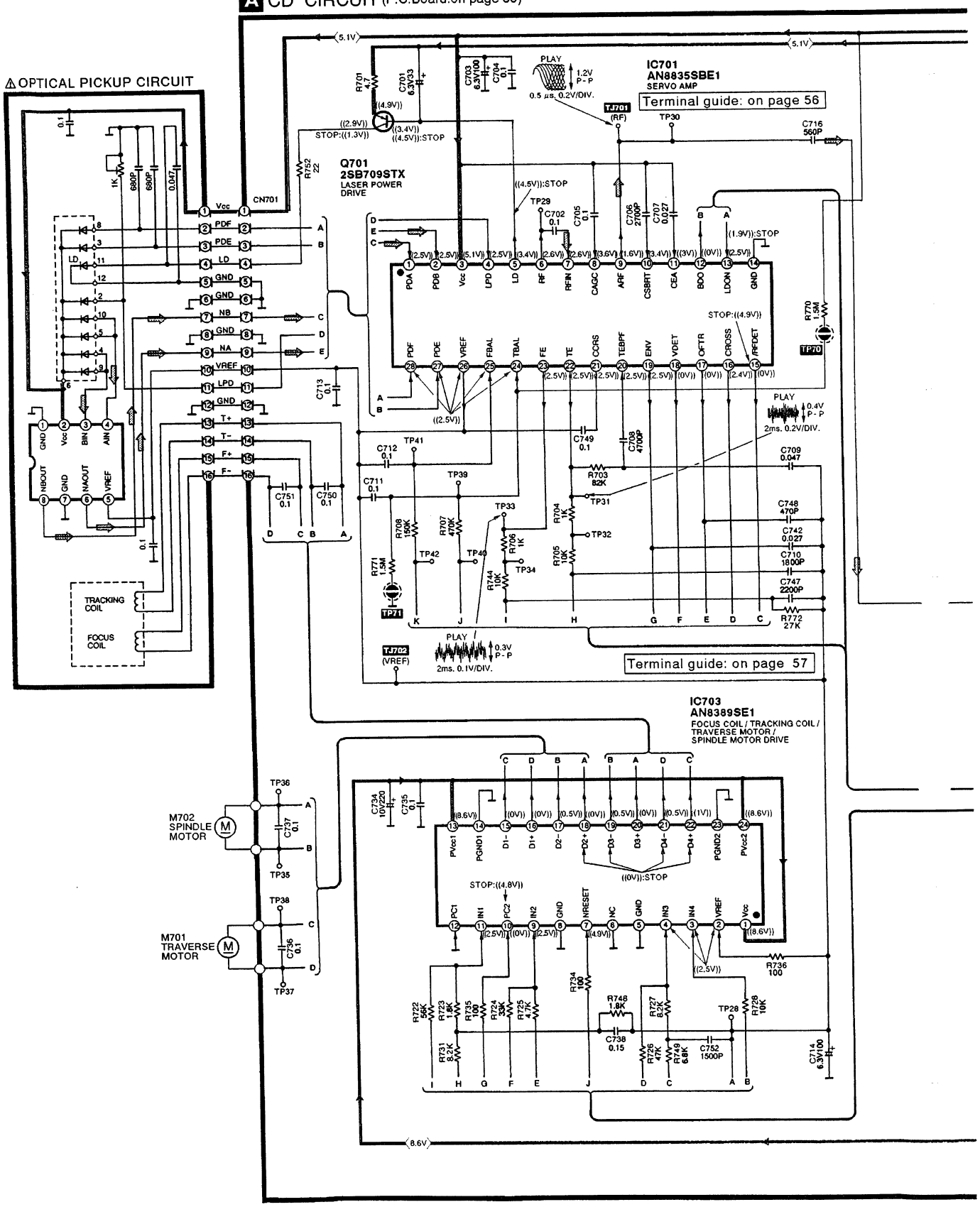
• DC voltage measurements are taken with electronics voltmeter. The negative terminal of the battery provides negative meter connection point.

No mark ... TAPE PLAYBACK	⌜ ⌟ ..... TUNER
( ) ..... MW/LW	< > ..... FM
(( )) ..... CD	[[ ]] ..... REC

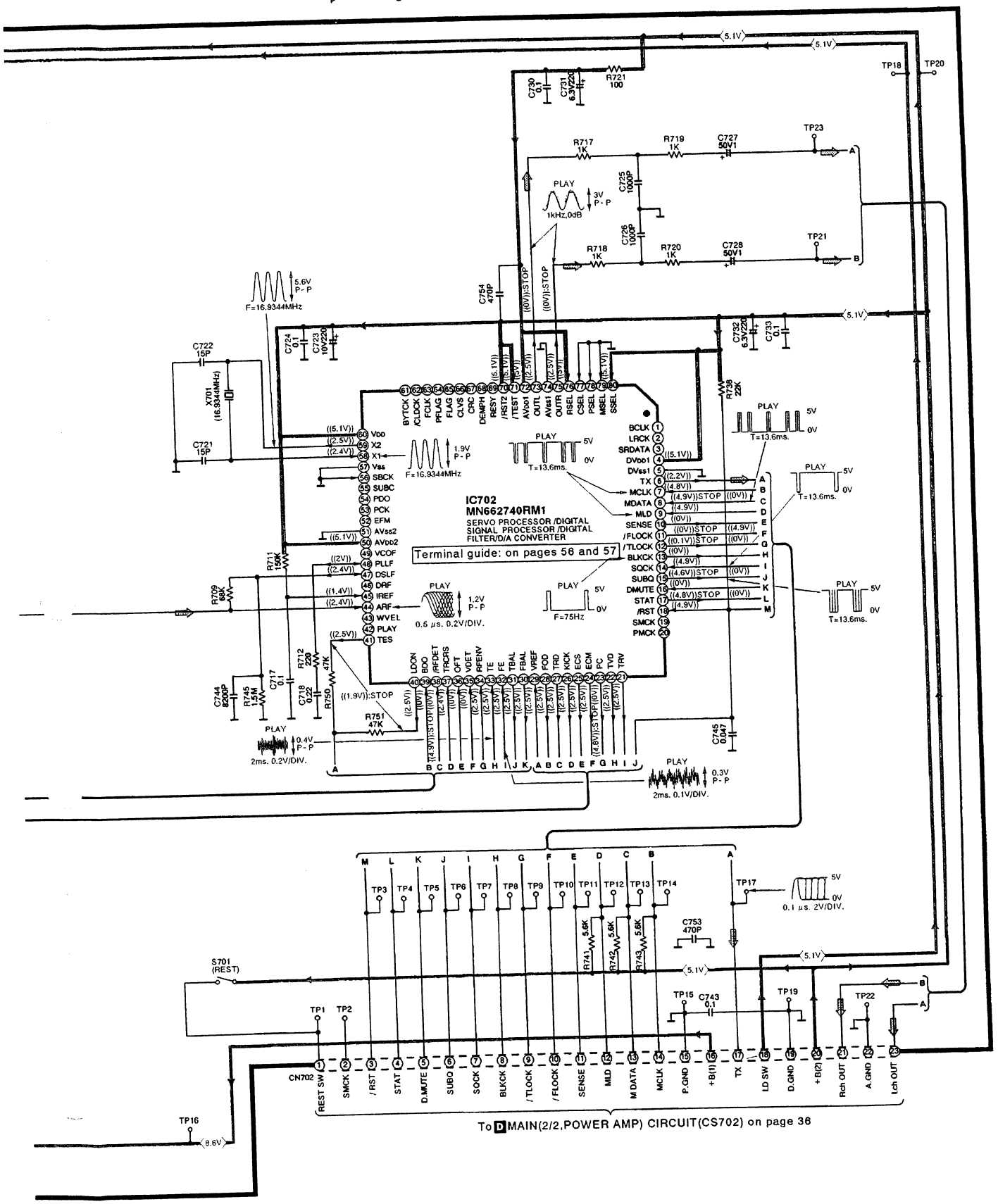
• Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

: CD Signal Line
: FM/AM/ V cap Control Signal Line
: Main Signal Line
: FM Signal Line
: Tape Signal Line
: AM OSC Signal Line
: Record Signal Line
: FM OSC Signal Line
: Mic Signal Line
: + B Line

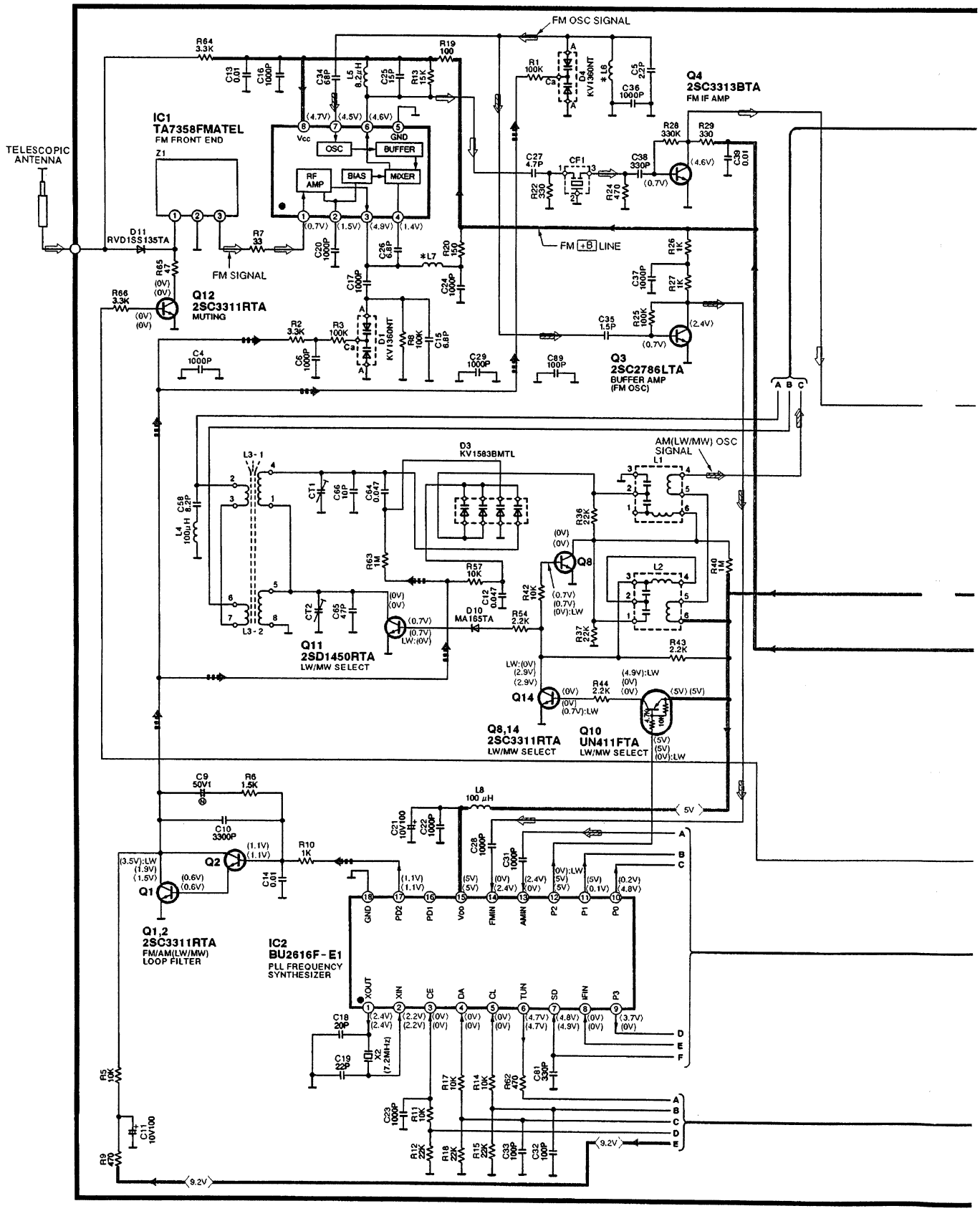
A CD CIRCUIT (P.C.Board:on page 39)



: CD Signal Line : + B Line

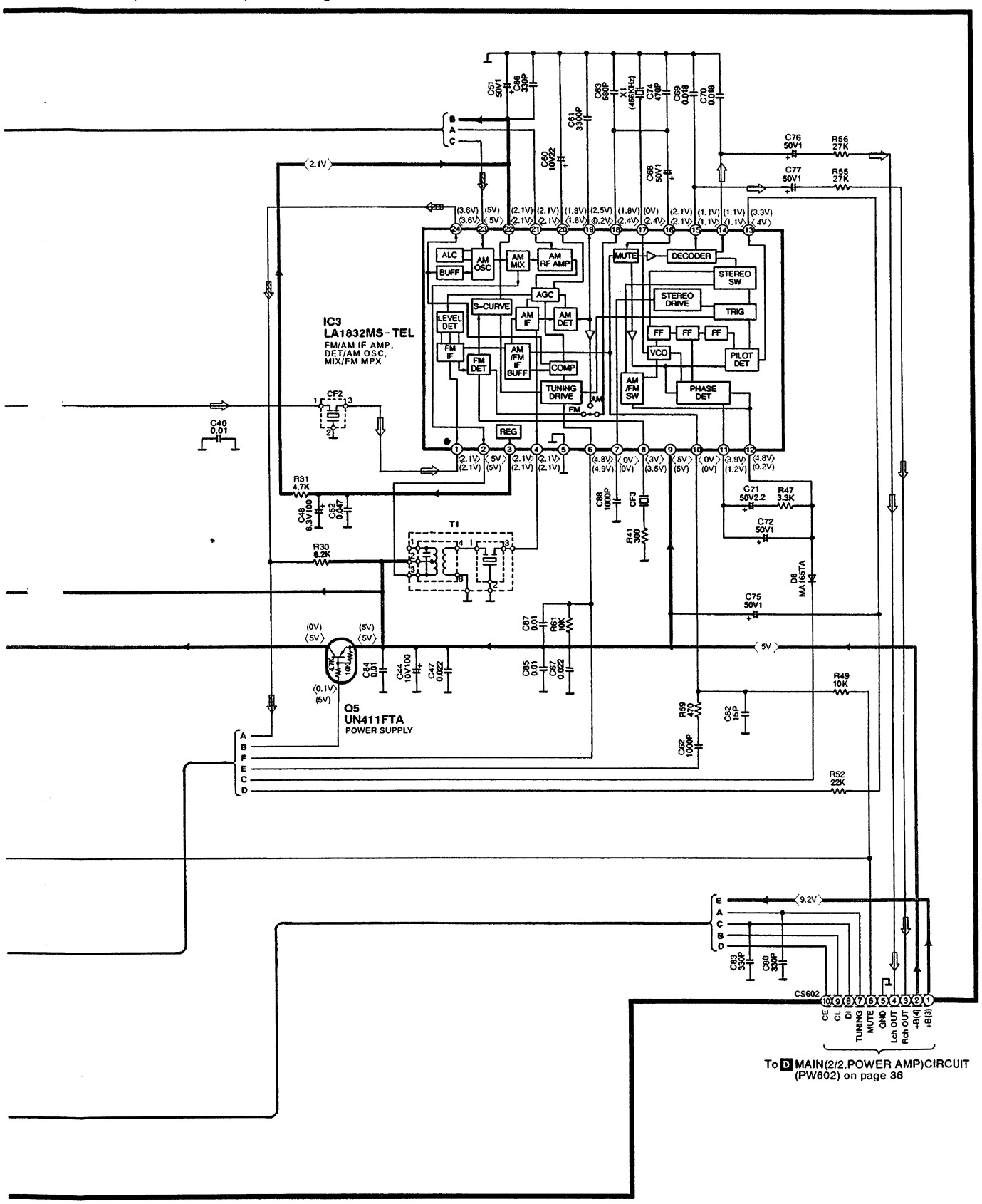

IC702
MN662740RM1
SERVO PROCESSOR /DIGITAL SIGNAL PROCESSOR /DIGITAL FILTER/D/A CONVERTER
Terminal guide: on pages 58 and 57
To D MAIN(2/2,POWER AMP) CIRCUIT(CS702) on page 36

B TUNER CIRCUIT (P.C.Board : on page 36)

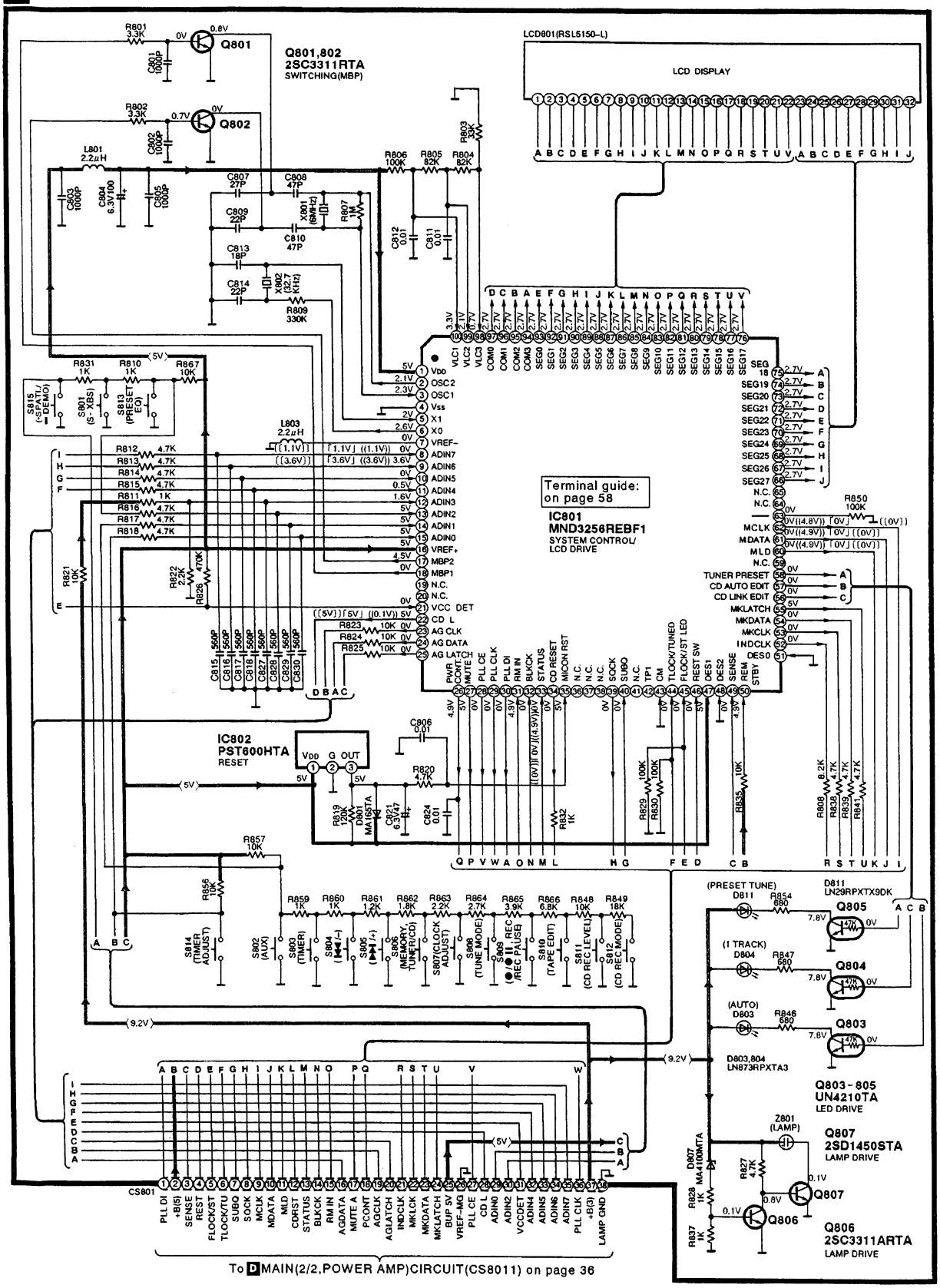


: FM Signal Line : AM (LW/MW) OSC Signal Line : FM OSC Signal Line

: FM/AM V cap Control Signal Line : + B Line

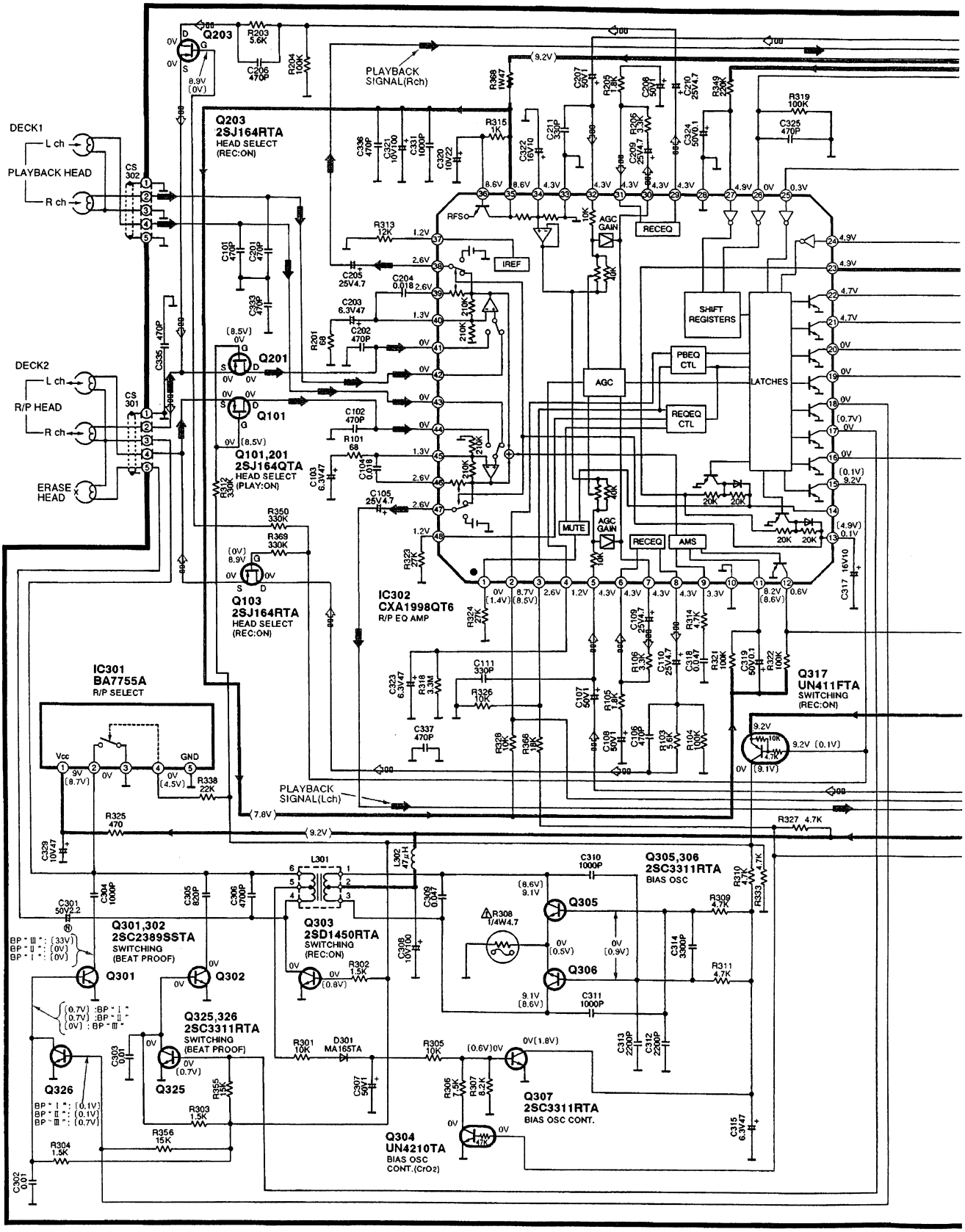


C LCD CIRCUIT (P.C.Board:on page 40)

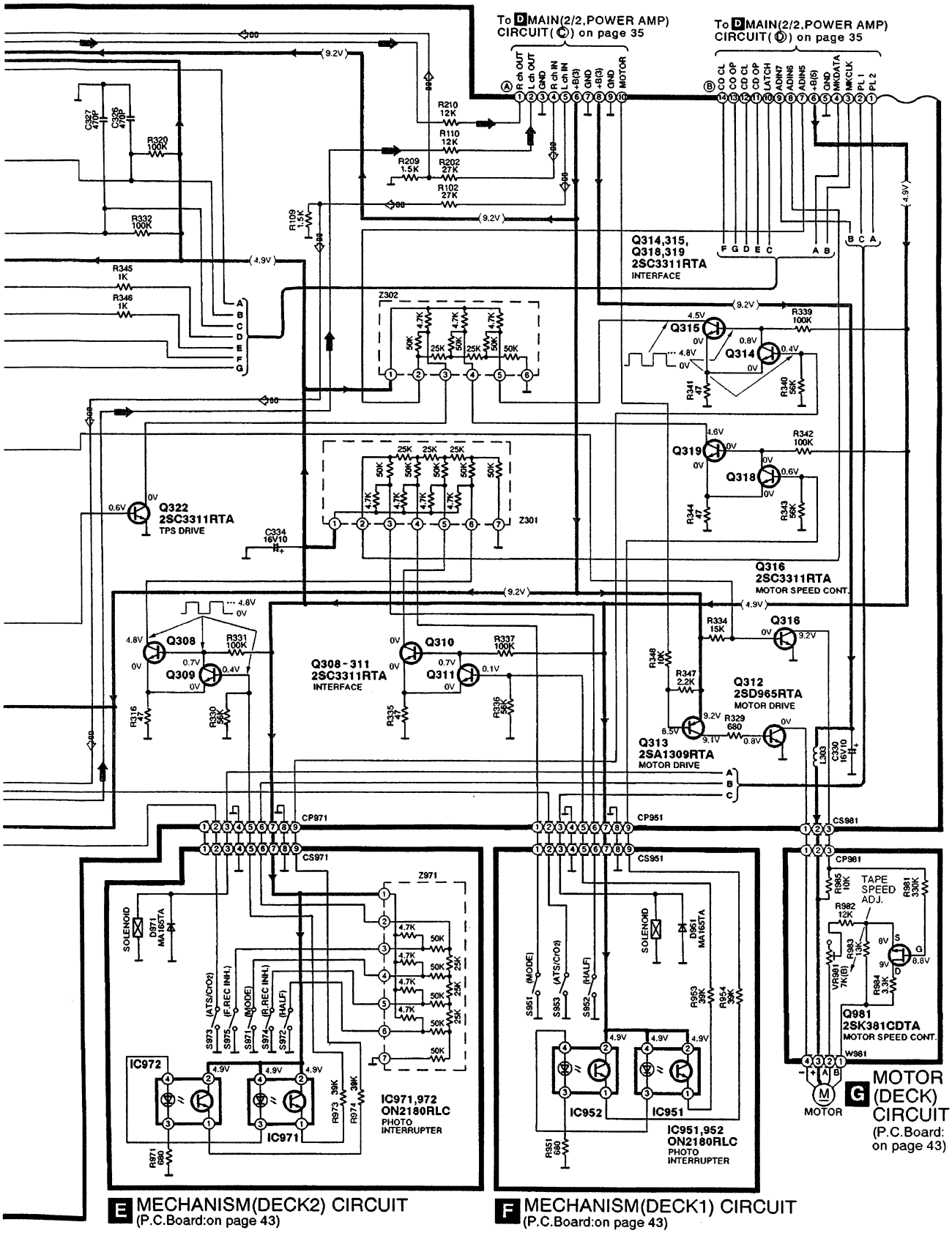


: Tape Signal Line　□□□▷ : Record Signal Line　: + B Line

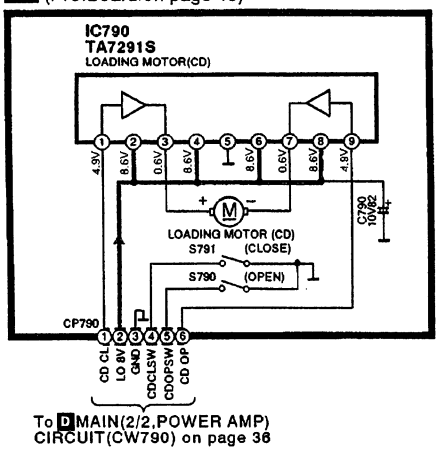
D MAIN(1/2,DECK)CIRCUIT (P.C.Board:on pages 42 and 43)



: Tape Signal Line : Record Signal Line : + B Line

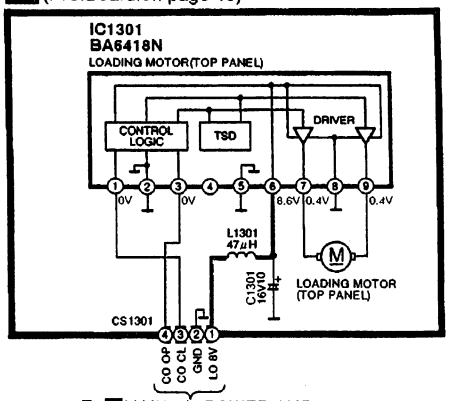

To D MAIN(2/2,POWER AMP) CIRCUIT(C) on page 35
To D MAIN(2/2,POWER AMP) CIRCUIT(D) on page 35
Q314,315, Q318,319 2SC3311RTA INTERFACE
Q322 2SC3311RTA TPS DRIVE
Q316 2SC3311RTA MOTOR SPEED CONT.
Q308-311 2SC3311RTA INTERFACE
Q312 2SD965RTA MOTOR DRIVE
Q313 2SA1309RTA MOTOR DRIVE
Q981 2SK381CDTA MOTOR SPEED CONT.
IC971,972 ON2180RLC PHOTO INTERRUPTER
IC951,952 ON2180RLC PHOTO INTERRUPTER
TAPE SPEED ADJ.
MOTOR
E MECHANISM(DECK2) CIRCUIT (P.C.Board:on page 43)
F MECHANISM(DECK1) CIRCUIT (P.C.Board:on page 43)
G MOTOR (DECK) CIRCUIT (P.C.Board: on page 43)

H LOADING MOTOR CIRCUIT
(P.C.Board:on page 43)



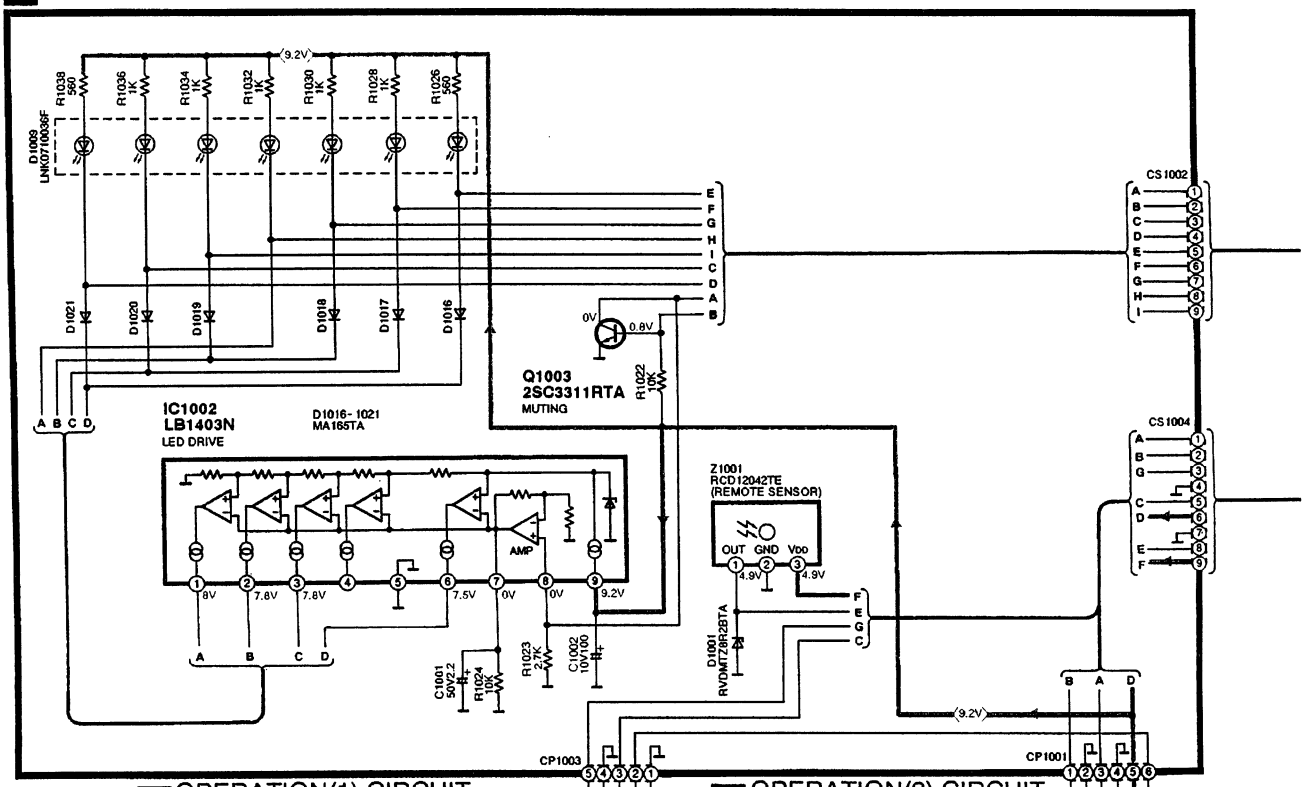
To D MAIN(2/2,POWER AMP) CIRCUIT(CW790) on page 36

I MOTOR(TOP PANEL)CIRCUIT
(P.C.Board:on page 43)

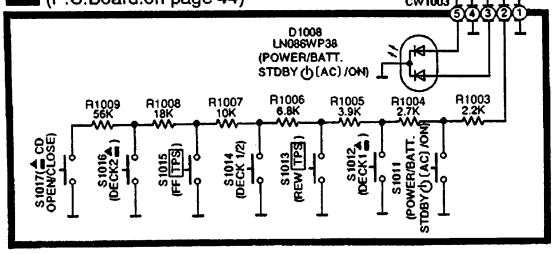


To D MAIN(2/2,POWER AMP) CIRCUIT(CW1301) on page 36

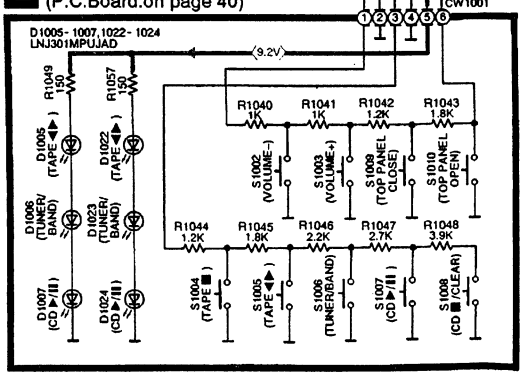
J LED CIRCUIT (P.C.Board:on page 41)



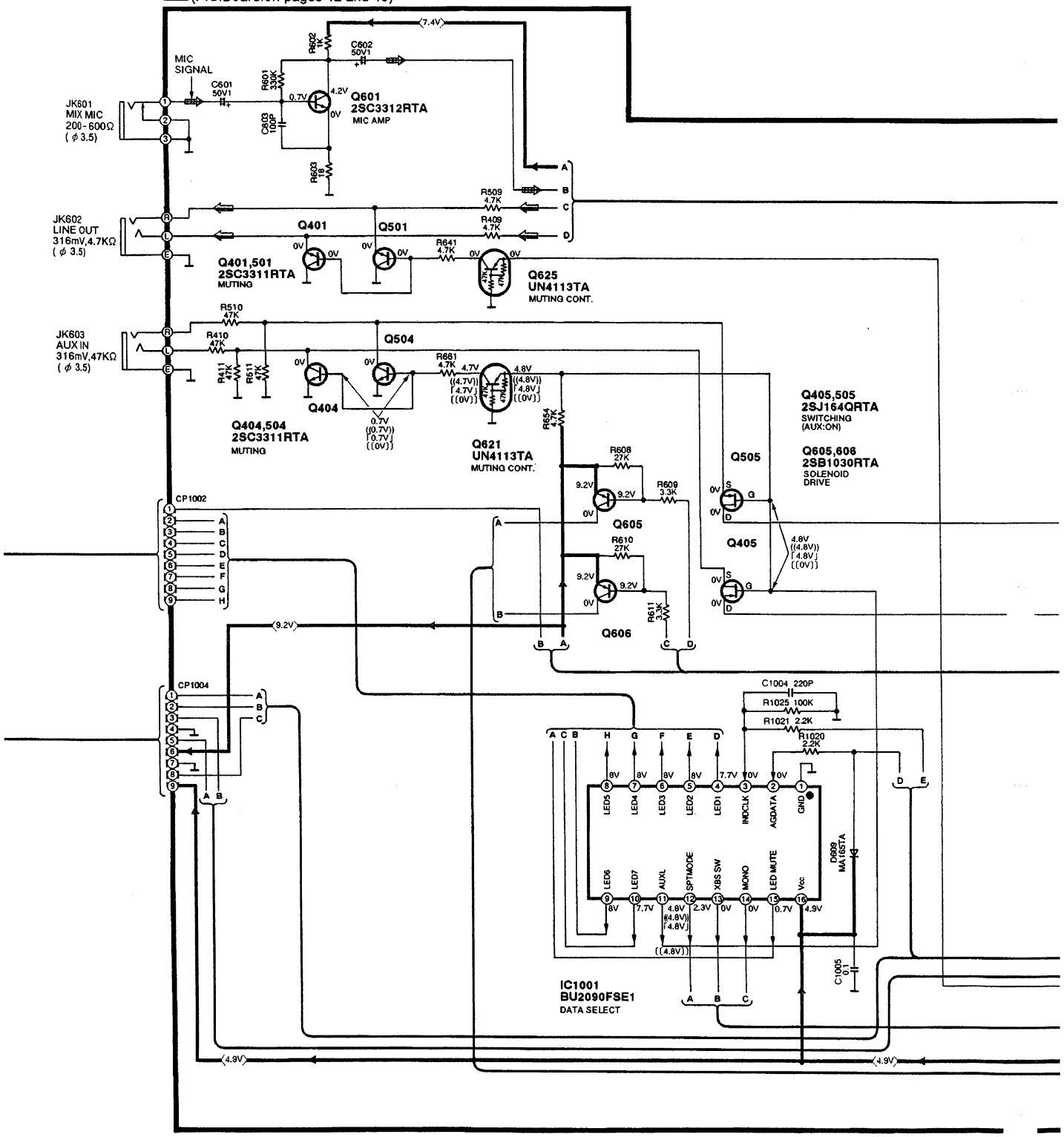
K OPERATION(1) CIRCUIT
(P.C.Board:on page 44)



L OPERATION(2) CIRCUIT
(P.C.Board:on page 40)

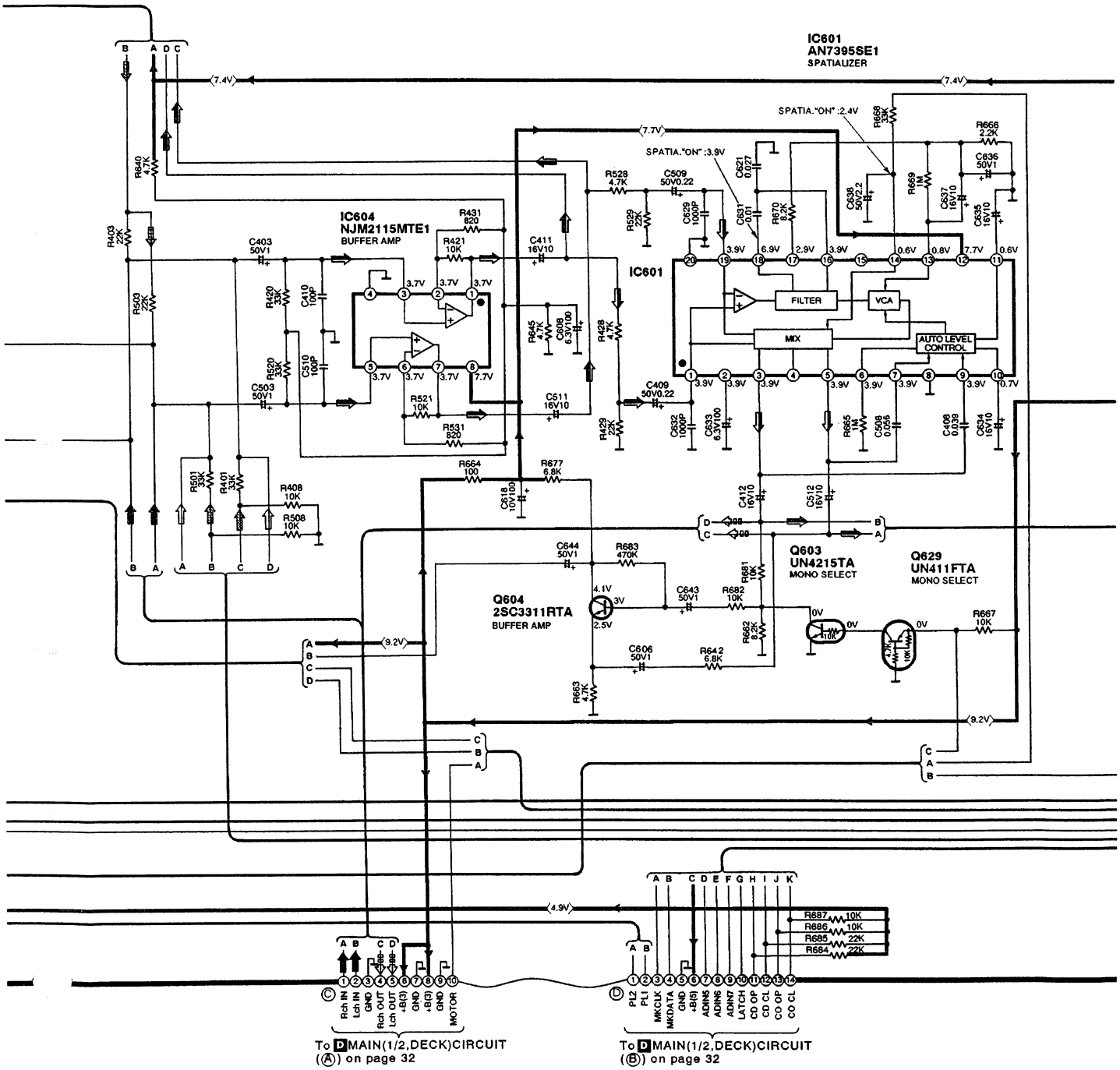


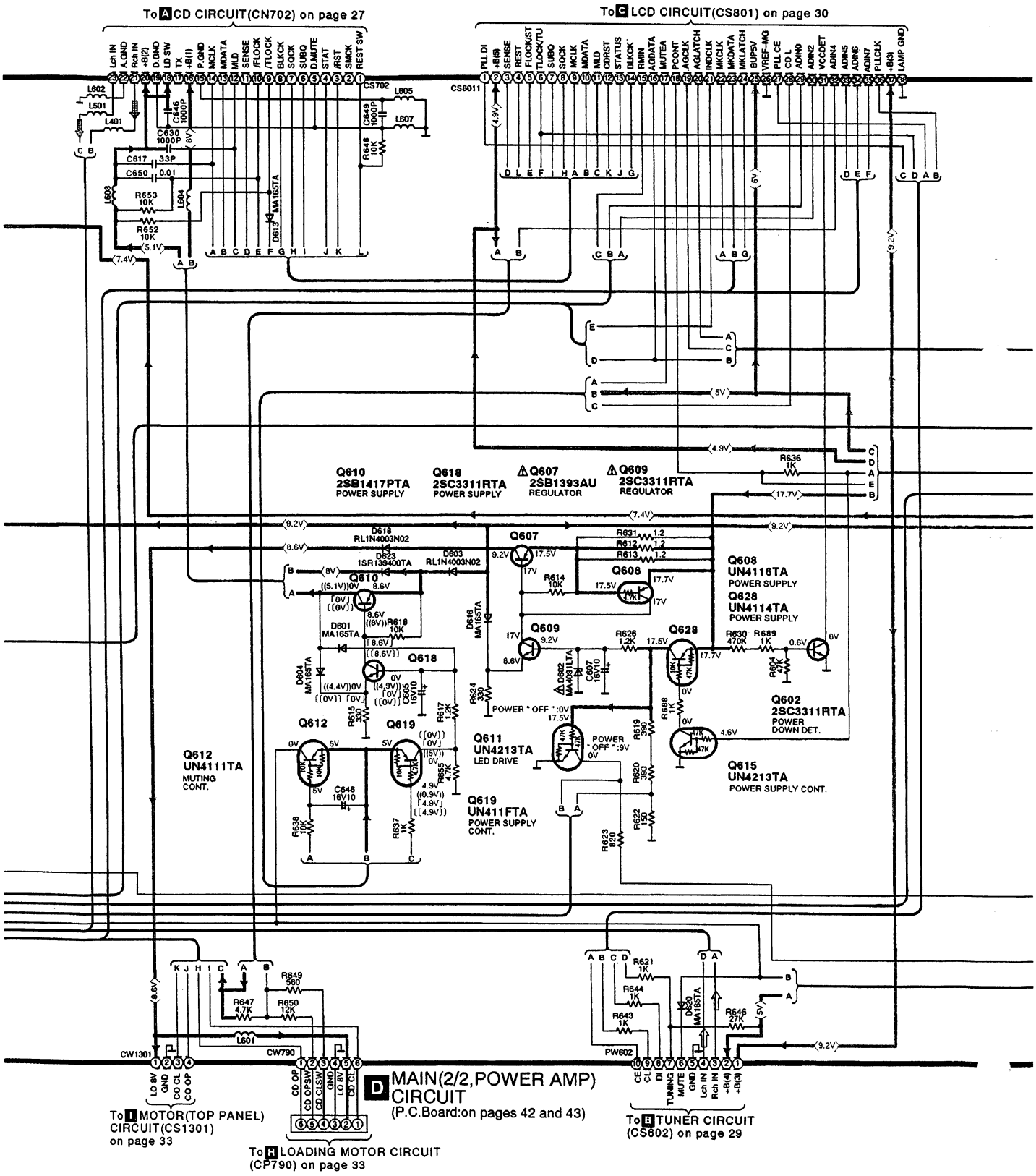
D MAIN(2/2,POWER AMP) CIRCUIT
(P.C.Board:on pages 42 and 43)

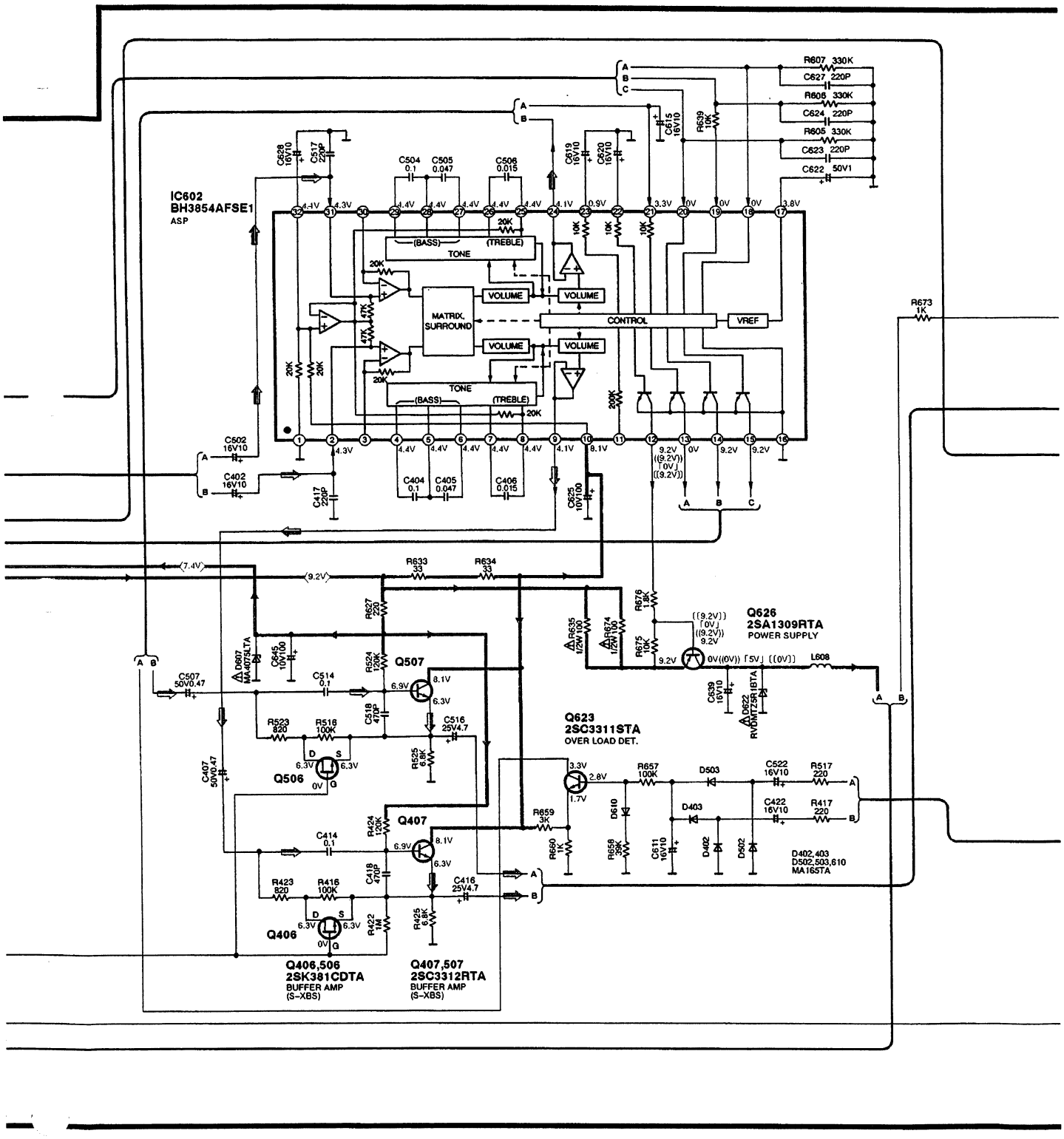


: Tape Signal Line　　: Record Signal Line　　:CD Signal Line

: Mic Signal Line　　: Main Signal Line　　:+ B Line



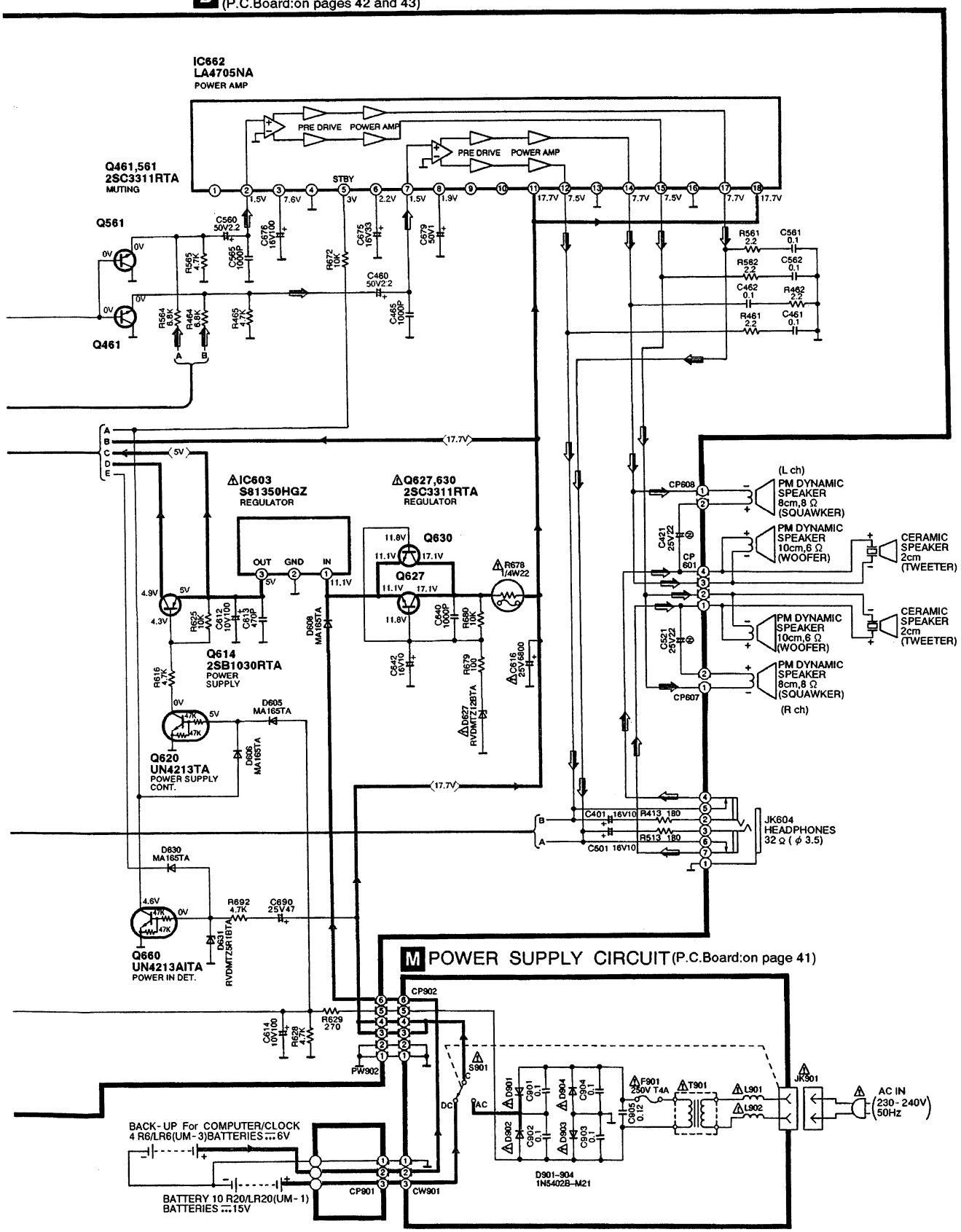

To A CD CIRCUIT(CN702) on page 27
To C LCD CIRCUIT(CS801) on page 30
Q610
2SB1417PTA
POWER SUPPLY
Q618
2SC3311RTA
POWER SUPPLY
⚠Q607
2SB1393AU
REGULATOR
⚠Q609
2SC3311RTA
REGULATOR
Q607
Q608
UN4116TA
POWER SUPPLY
Q628
UN4114TA
POWER SUPPLY
Q609
Q610
Q618
Q612
UN4111TA
MUTING
CONT.
Q611
UN4213TA
LED DRIVE
Q619
UN411FTA
POWER SUPPLY
CONT.
Q602
2SC3311RTA
POWER
DOWN DET.
Q615
UN4213TA
POWER SUPPLY CONT.
D MAIN(2/2,POWER AMP)
CIRCUIT
(P.C.Board:on pages 42 and 43)
To I MOTOR(TOP PANEL)
CIRCUIT(CS1301)
on page 33
To H LOADING MOTOR CIRCUIT
(CP790) on page 33
To B TUNER CIRCUIT
(CS602) on page 29



□□□▷ : Record Signal Line ▷ :CD Signal Line ▷ : Main Signal Line ▷ :+ B Line

D MAIN(2/2,POWER AMP)CIRCUIT
(P.C.Board:on pages 42 and 43)

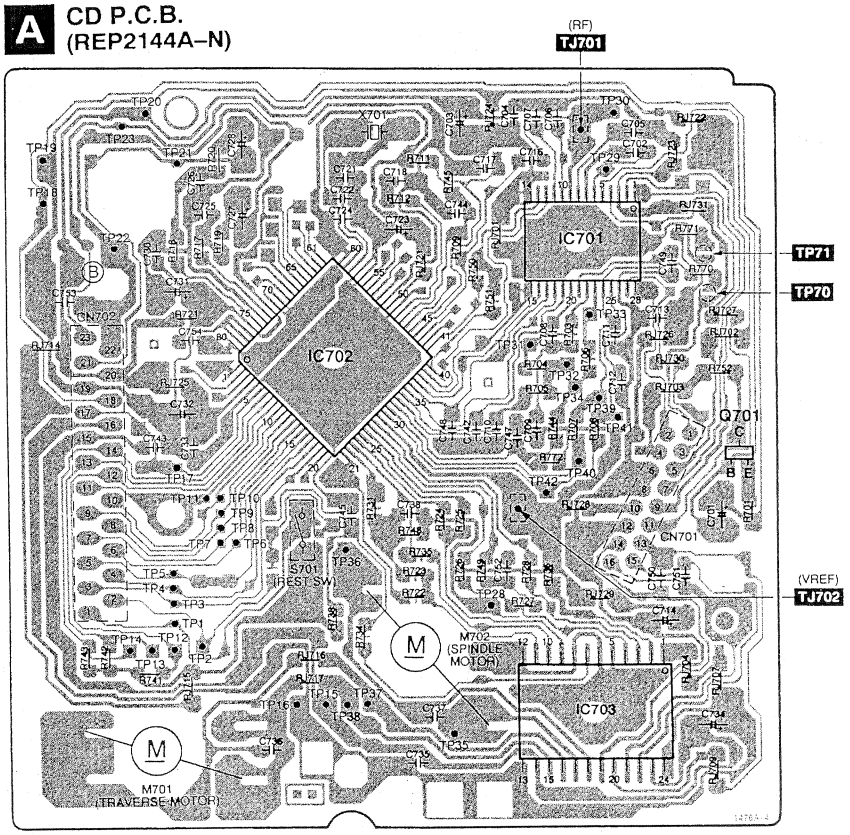
: Main Signal Line : + B Line



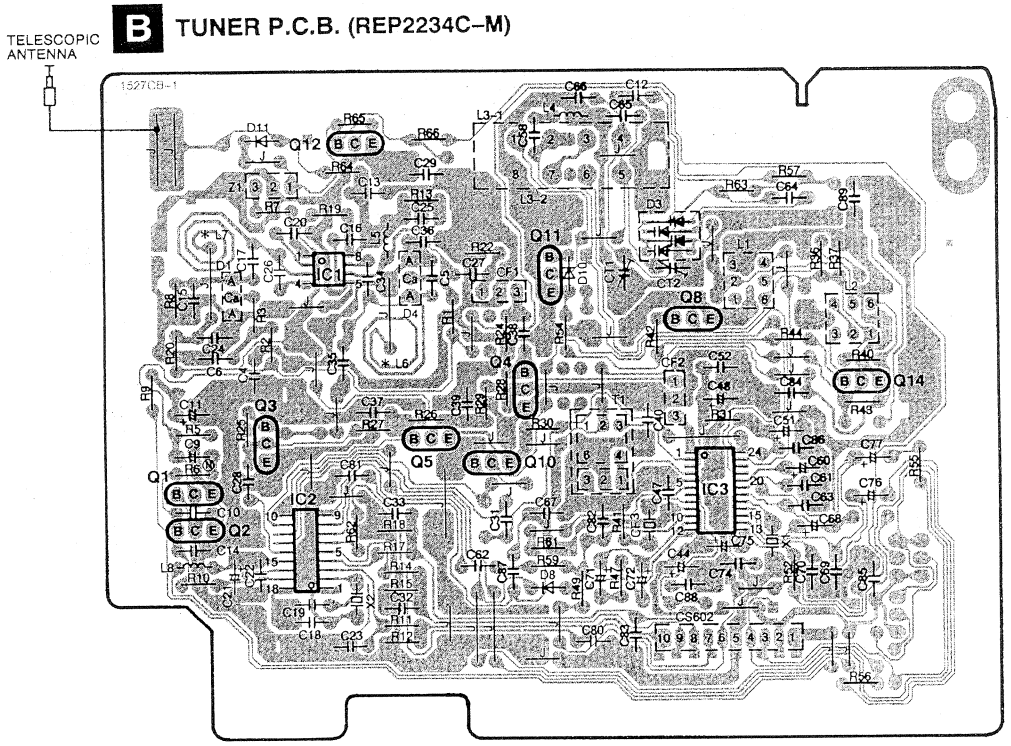
■ Printed Circuit Board Diagram

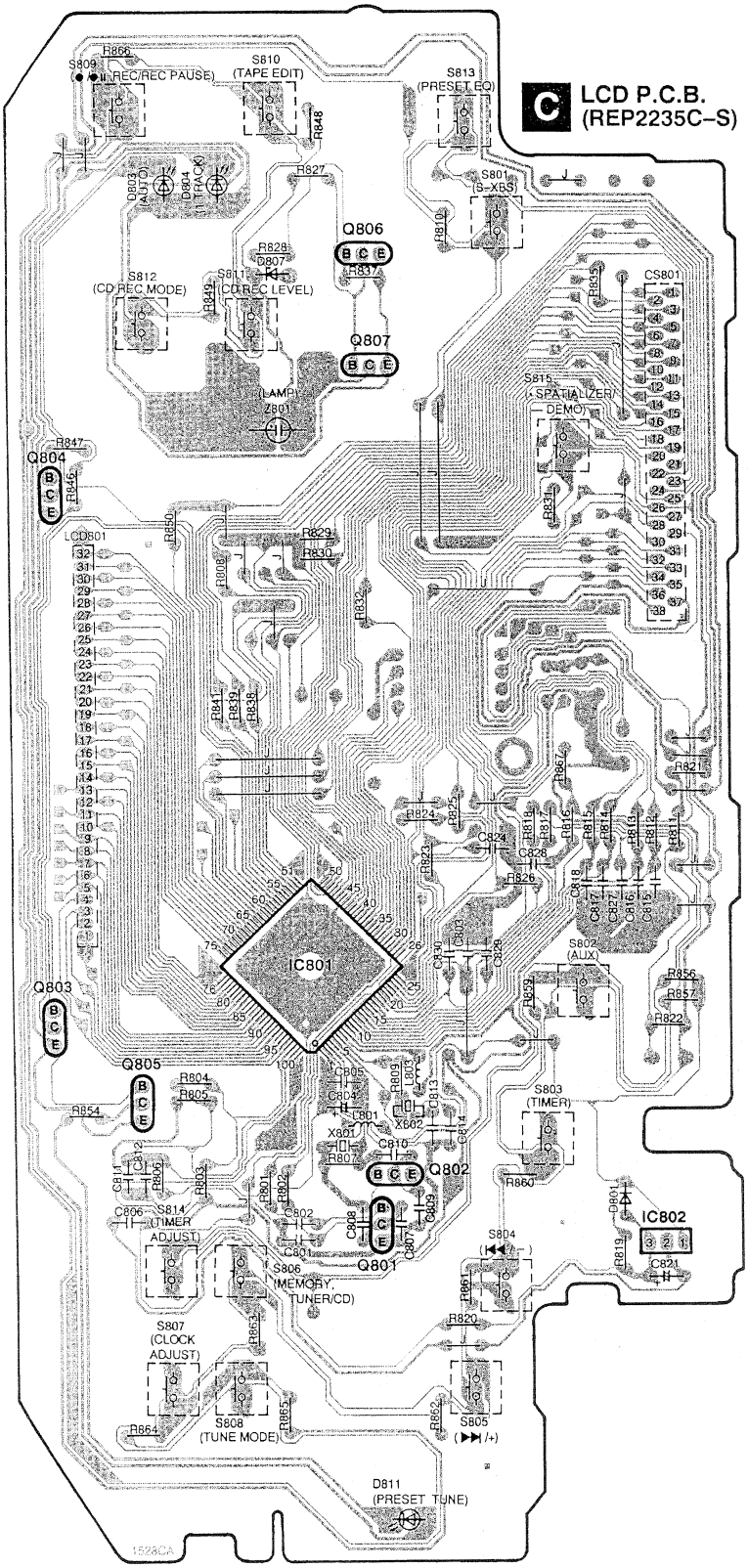
- This circuit board diagram may be modified at any time with the development of new technology.

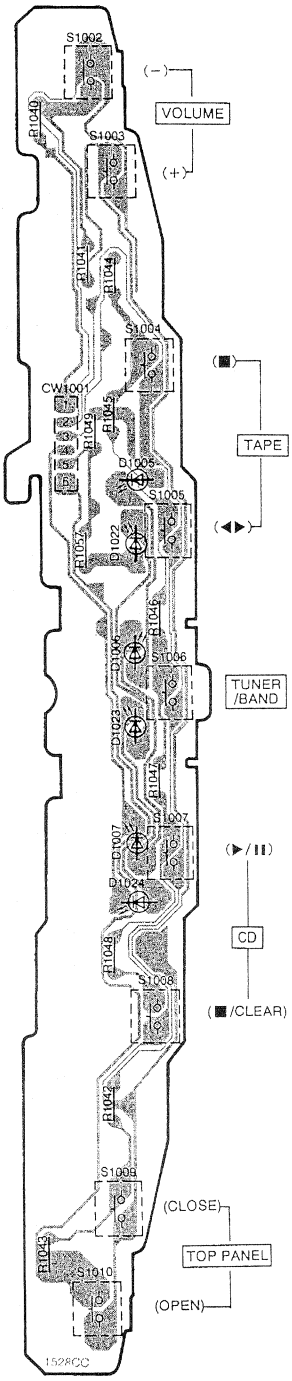
A CD P.C.B. (REP2144A–N)



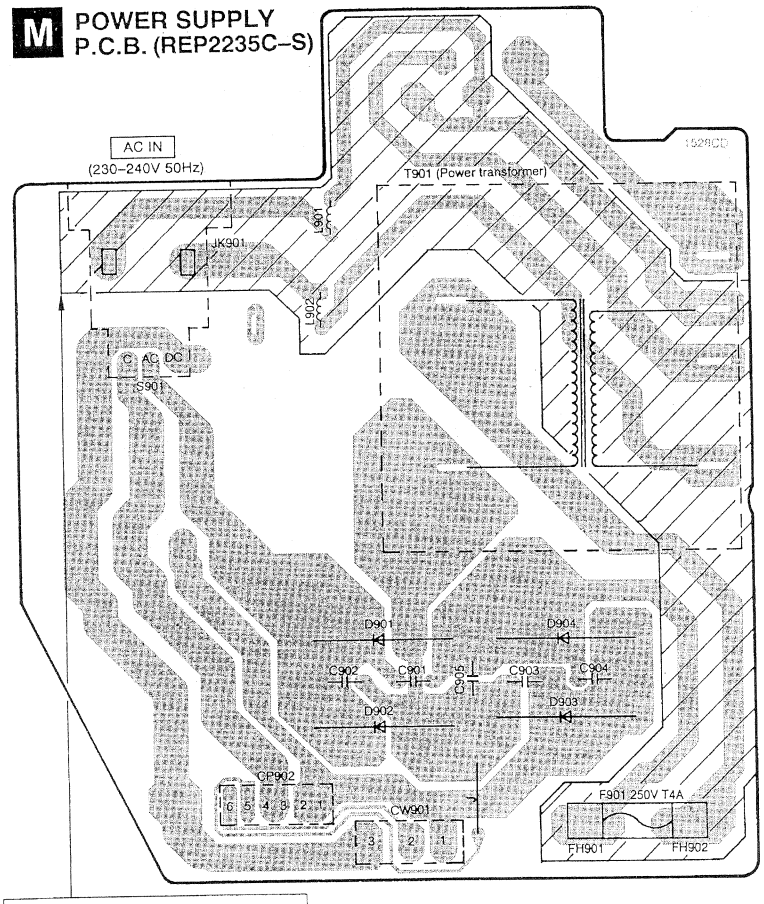
B TUNER P.C.B. (REP2234C–M)




C LCD P.C.B.
(REP2235C–S)
S809 (● ●/II REC/REC PAUSE)
S810 (TAPE EDIT)
S813 (PRESET EQ)
S801 (S-XBS)
S812 (CD REC MODE)
S811 (CD REC LEVEL)
Q806
Q807
(LAMP) Z801
S815 (SPATIALIZER DEMO)
CS801
Q804
LCD801
IC801
Q803
Q805
S803 (TIMER)
S802 (AUX)
Q802
Q801
IC802
S814 (TIMER ADJUST)
S806 (MEMORY TUNER/CD)
S807 (CLOCK ADJUST)
S808 (TUNE MODE)
S804 (⏮/-)
S805 (⏭/+)
D811 (PRESET TUNE)
1528CA

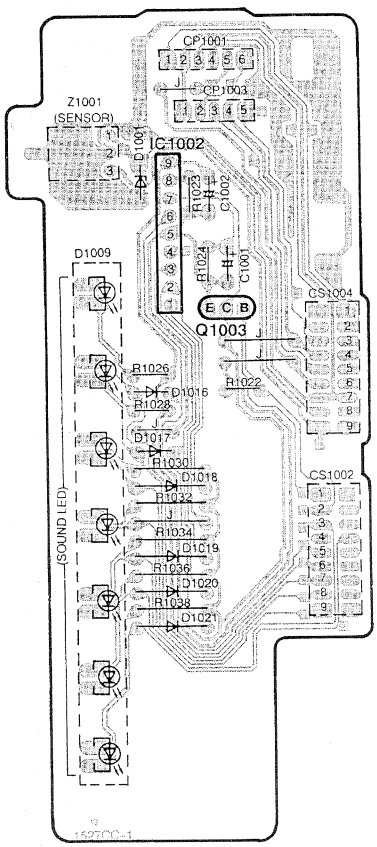

L OPERATION
(2) P.C.B.
(REP2235C–S)
S1002
(–)
VOLUME
(+)
S1003
S1004
(■)
TAPE
(◀▶)
S1005
S1006
TUNER
/BAND
S1007
(▶/II)
CD
(■/CLEAR)
S1008
S1009
(CLOSE)
TOP PANEL
(OPEN)
S1010
CW1001
1528CC

M POWER SUPPLY P.C.B. (REP2235C-S)

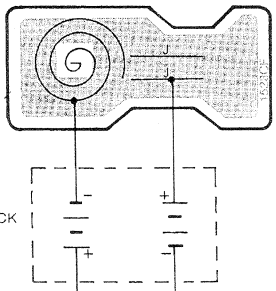


CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line. Please do not touch this portion.

J LED P.C.B. (REP2234C-M)

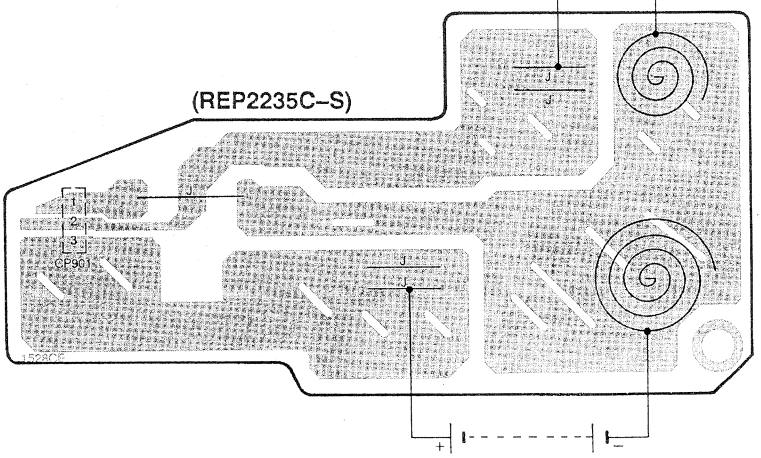


(REP2235C-S)

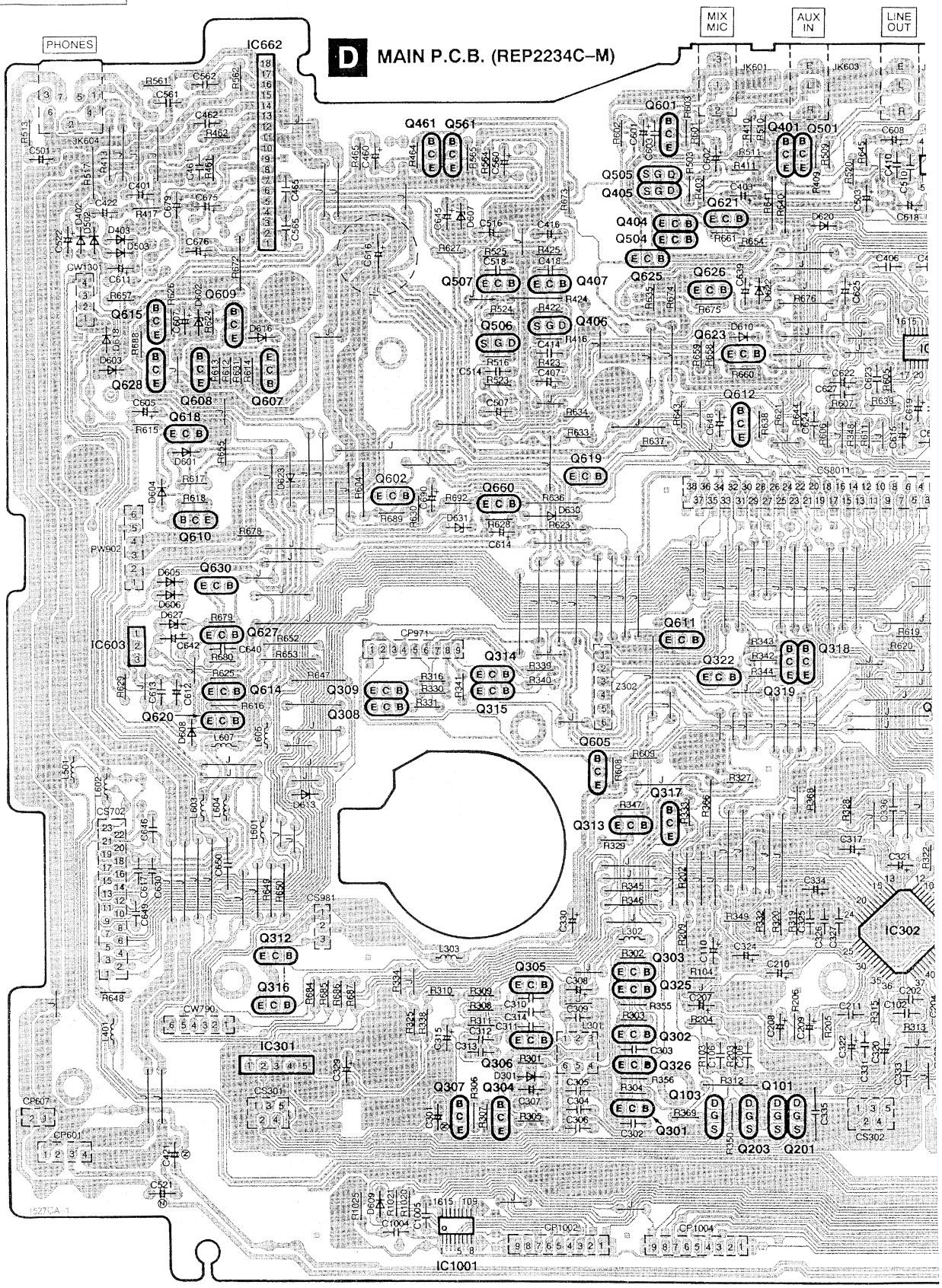


BACK-UP FOR
COMPUTER/CLOCK
4 R6/LR6(UM-3)
BATTERIES ⎓6V

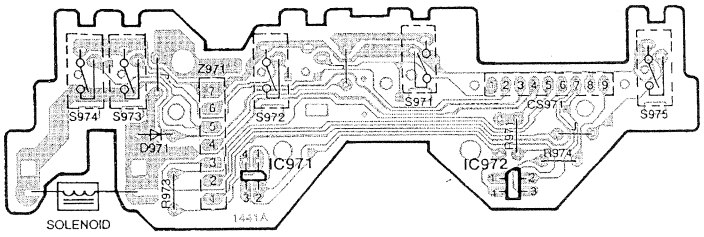
(REP2235C-S)



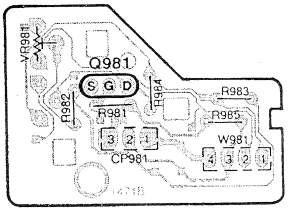
BATTERY 10 R20/LR20(UM-1)
BATTERIES ⎓15V


D MAIN P.C.B. (REP2234C–M)
PHONES
MIX MIC
AUX IN
LINE OUT
IC662
IC603
IC301
IC302
IC1001
Q601
Q401
Q501
Q461
Q561
Q505
Q405
Q621
Q404
Q504
Q625
Q626
Q507
Q407
Q615
Q609
Q506
Q406
Q623
Q628
Q608
Q607
Q612
Q618
Q619
Q602
Q660
Q610
Q630
Q627
Q611
Q322
Q318
Q614
Q309
Q315
Q314
Q319
Q620
Q308
Q605
Q317
Q313
Q312
Q316
Q305
Q303
Q325
Q306
Q302
Q326
Q307
Q304
Q103
Q101
Q301
Q203
Q201

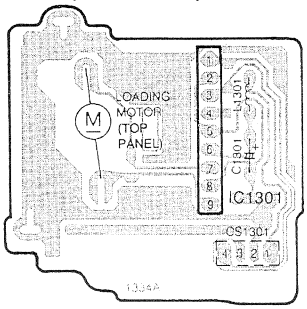
E MECHANISM (DECK2) P.C.B. (REP2131B)

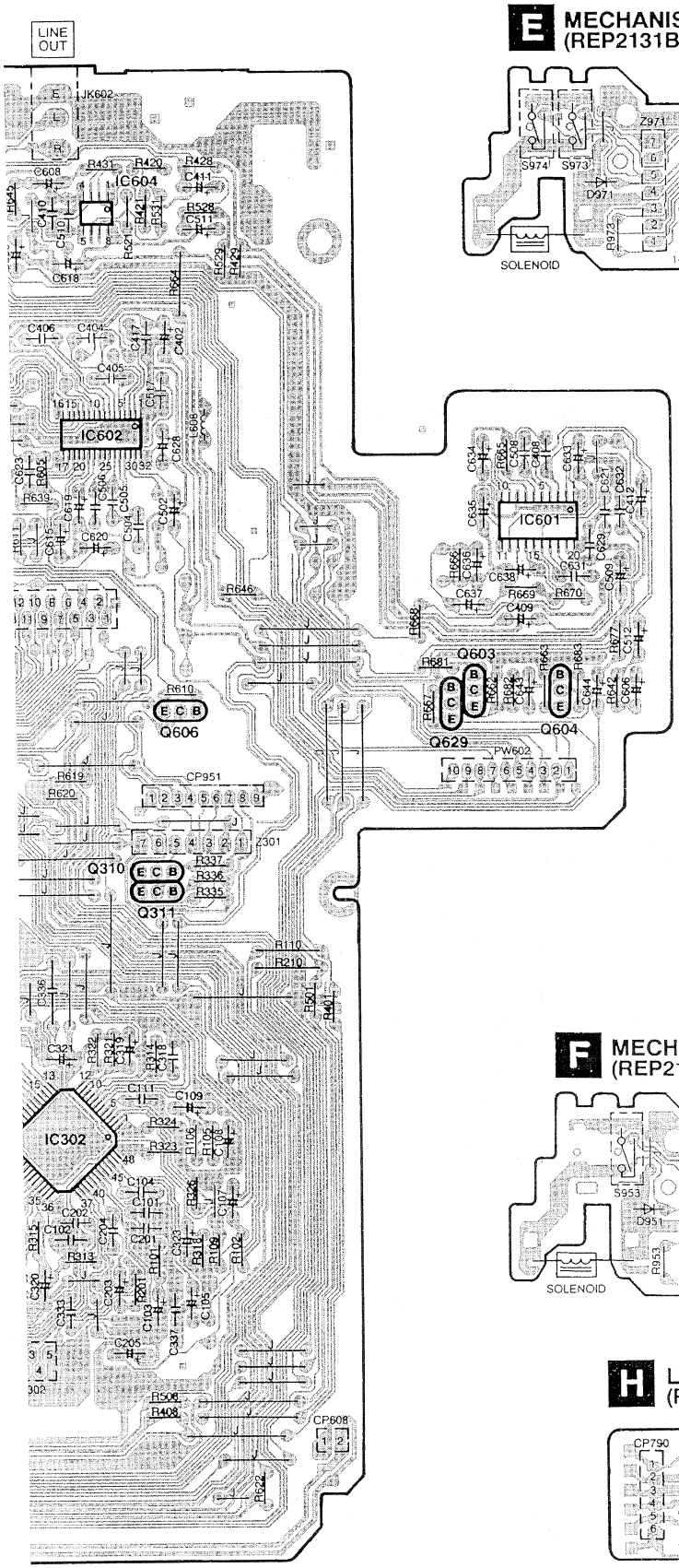


G MOTOR (DECK) P.C.B. (REP2133B)

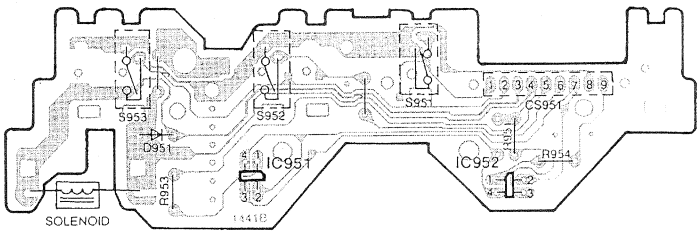


I MOTOR (TOP PANEL) P.C.B. (REP1977A)

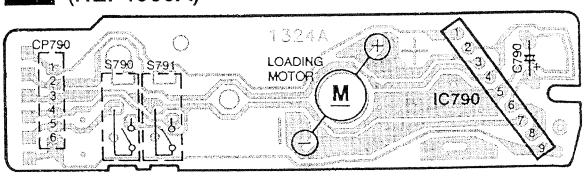




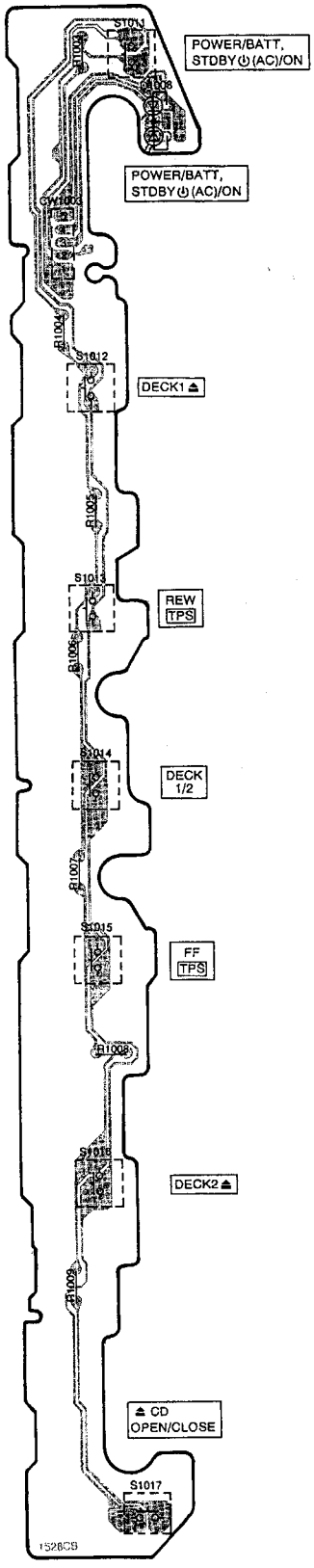
F MECHANISM (DECK1) P.C.B. (REP2132B)



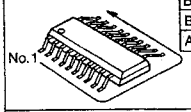
H LOADING MOTOR P.C.B. (REP1960A)



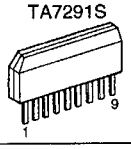
K OPERATION (1) P.C.B. (REP2235C-S)



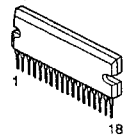
TA7358FMATEL	8PIN	LA1832MS-TEL	24PIN
NJM2115MT1	8PIN	AN8835SBE1	28PIN
BU2090FSE1	16PIN	BH3854AFSE1	32PIN
BU2616F-E1	18PIN		
AN7395SE1	20PIN		



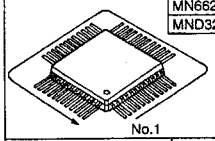
LB1403N
TA7291S



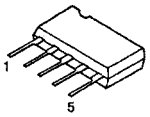
LA4705NA



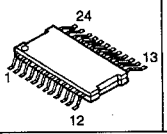
CXA1998QT6	48PIN		
MN662740RM1	80PIN		
MND3256REBF1	100PIN		



BA7755A



AN8389SE1



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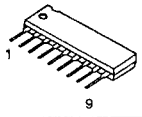

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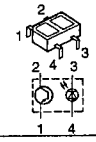
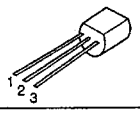


PST600HTA



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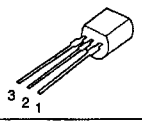

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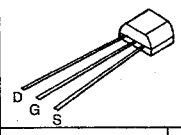

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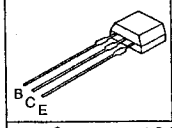

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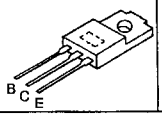

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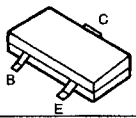

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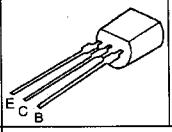

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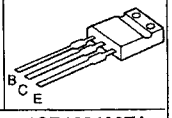

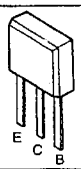

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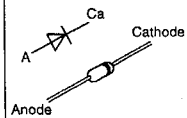
2SC2786LTA UN4111 UN4215
2SC3311A-Q UN411FTA
2SC3311R UN4113
2SC3311AR UN4114TA
2SC3312RTA UN4116



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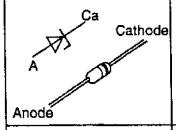
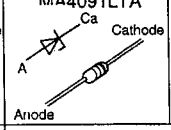
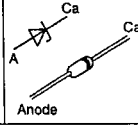
MA165
RVD1SS135TA

MA4100MTA



MA4075TA
MA4091LTA





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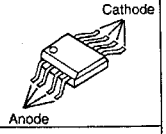
RVDMTZ8R2BTA
RVDMTZ12BTA

KV1583BMTL



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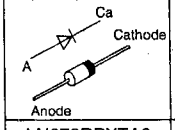

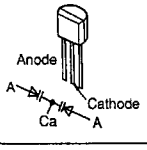

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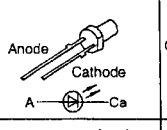

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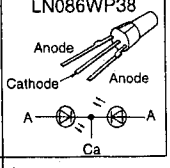

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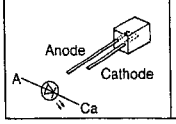

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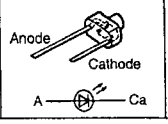

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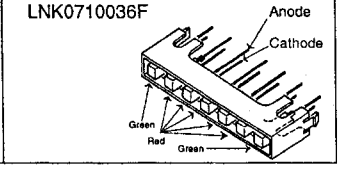
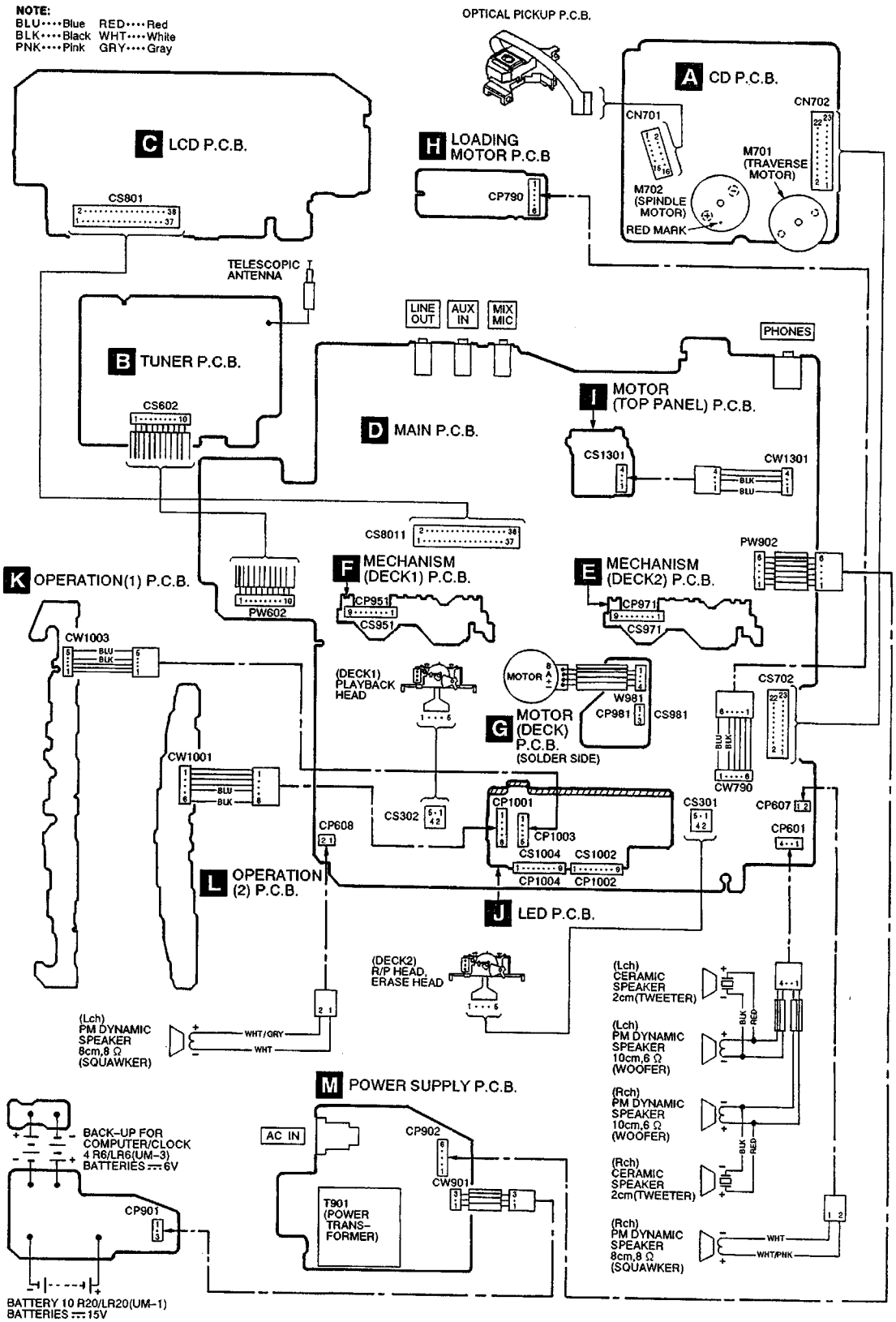
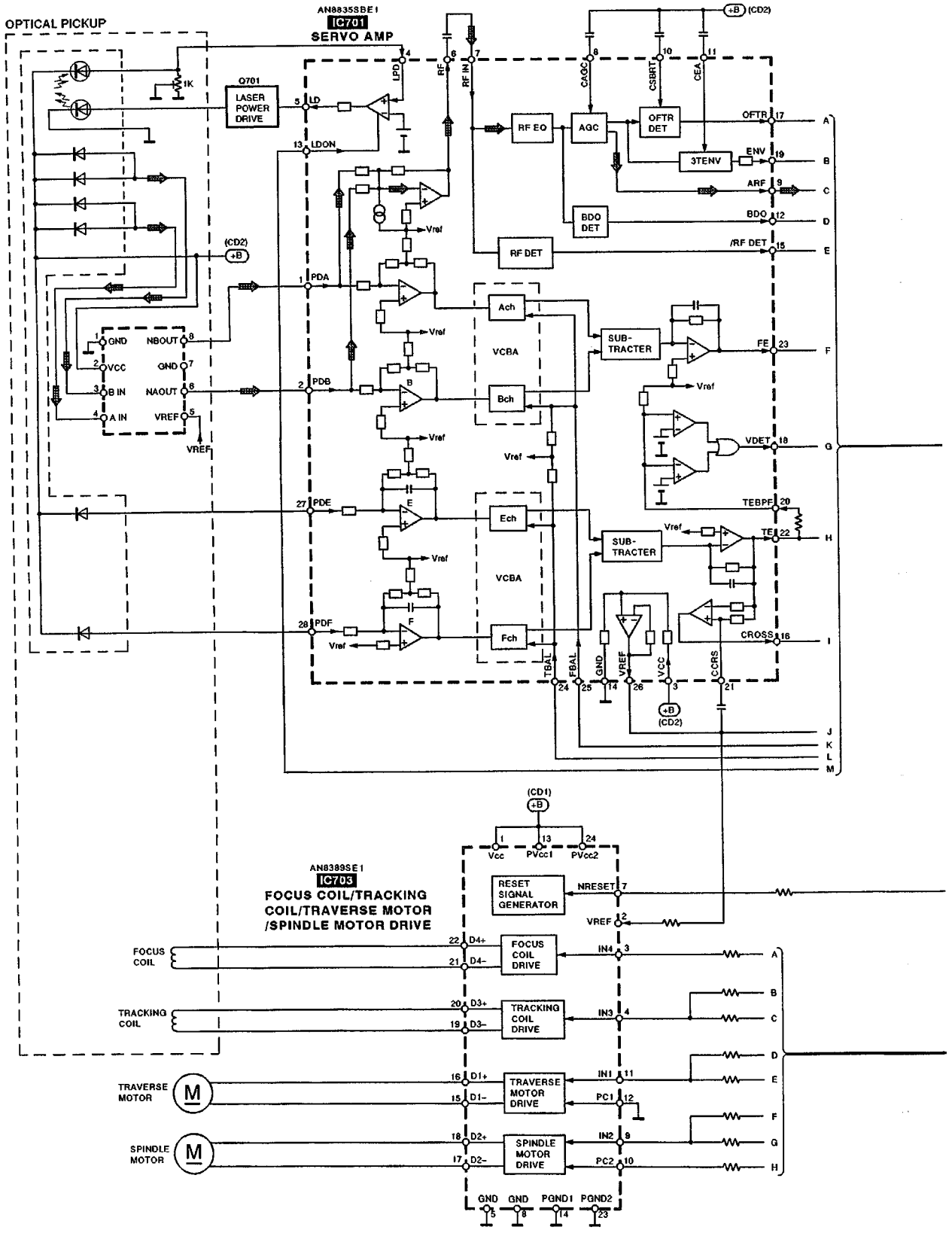


■ Wiring Connection Diagram



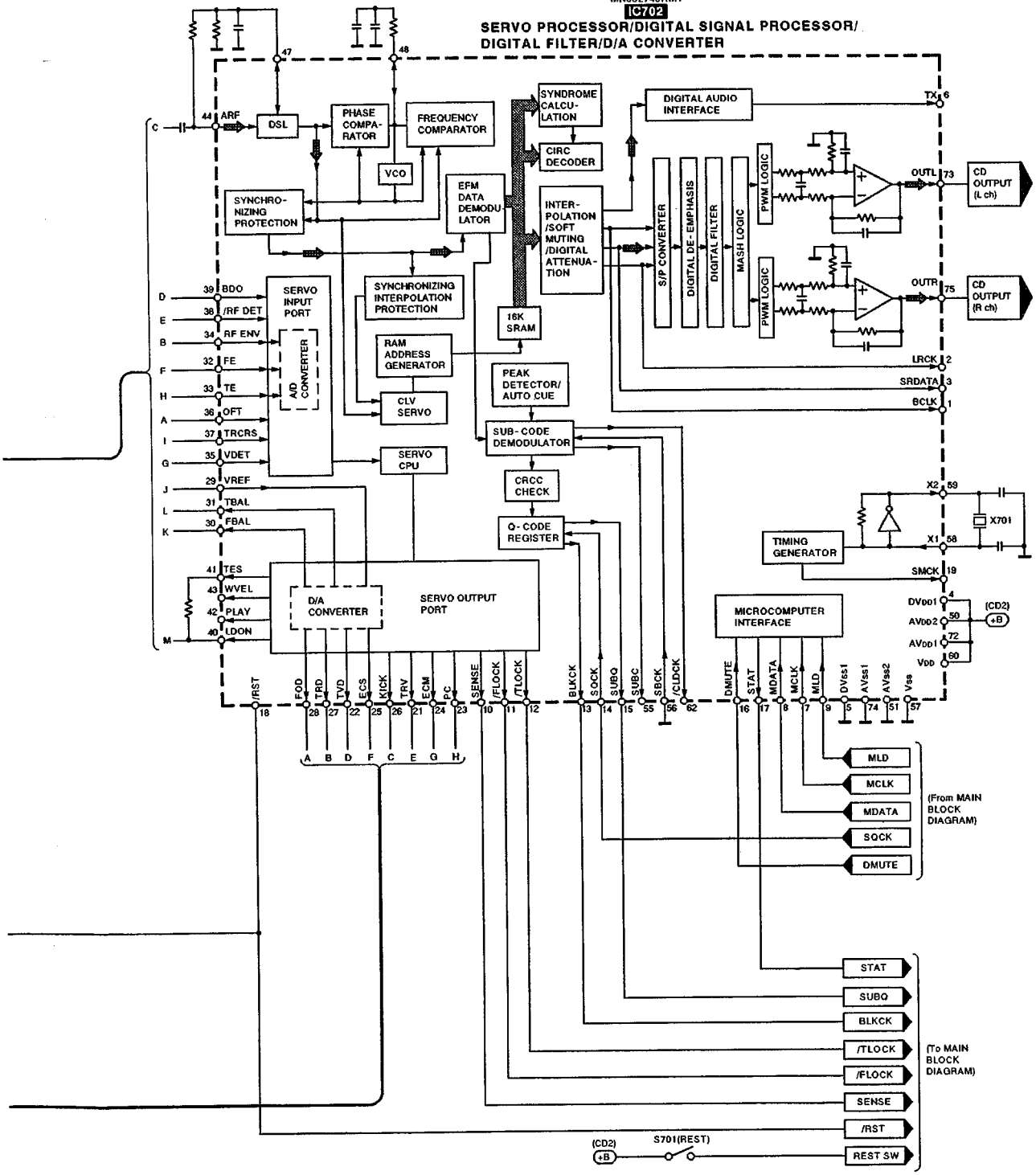
■ Block Diagram • CD Unit



MN662740RM1

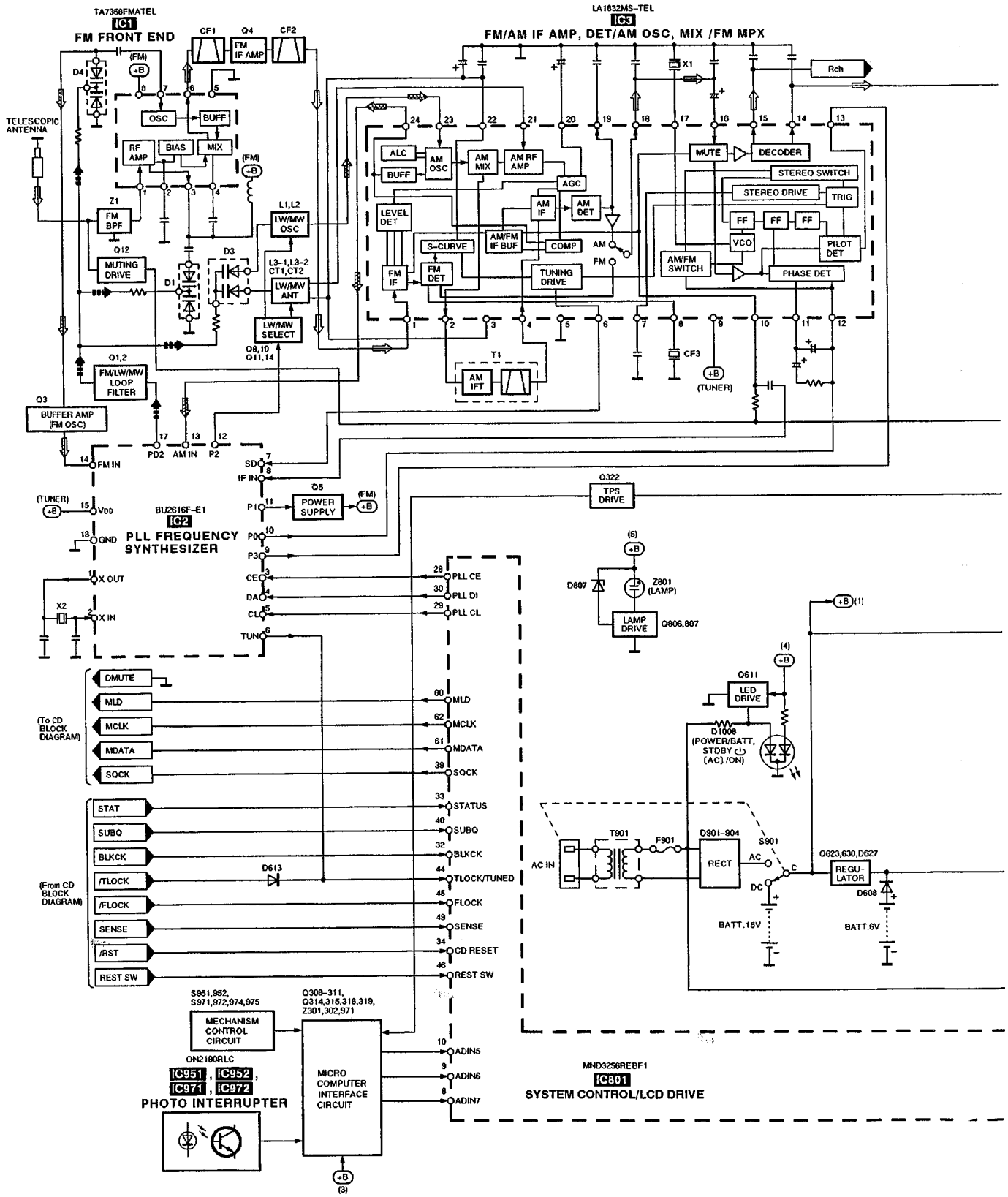
IC702

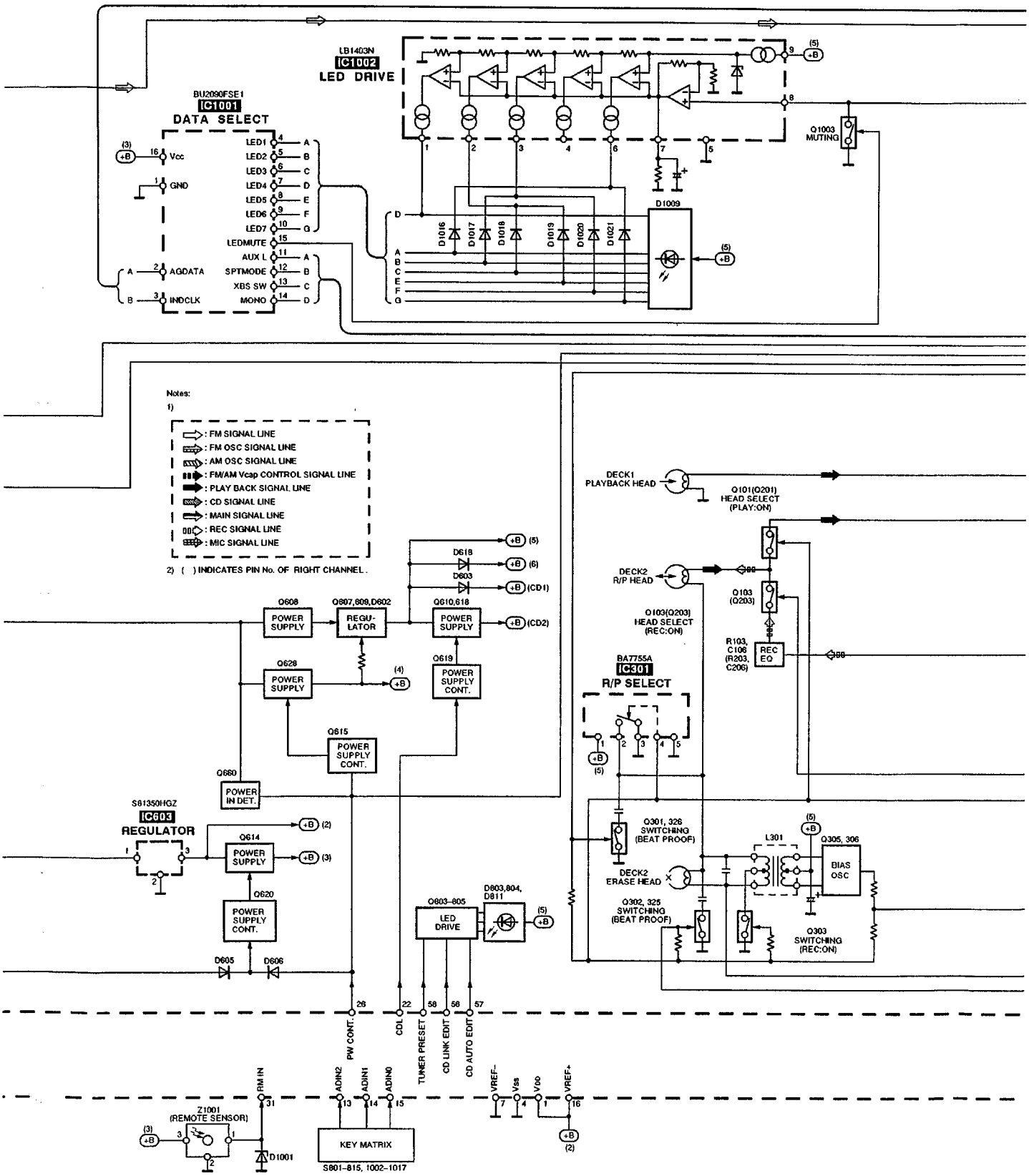
SERVO PROCESSOR/DIGITAL SIGNAL PROCESSOR/ DIGITAL FILTER/D/A CONVERTER

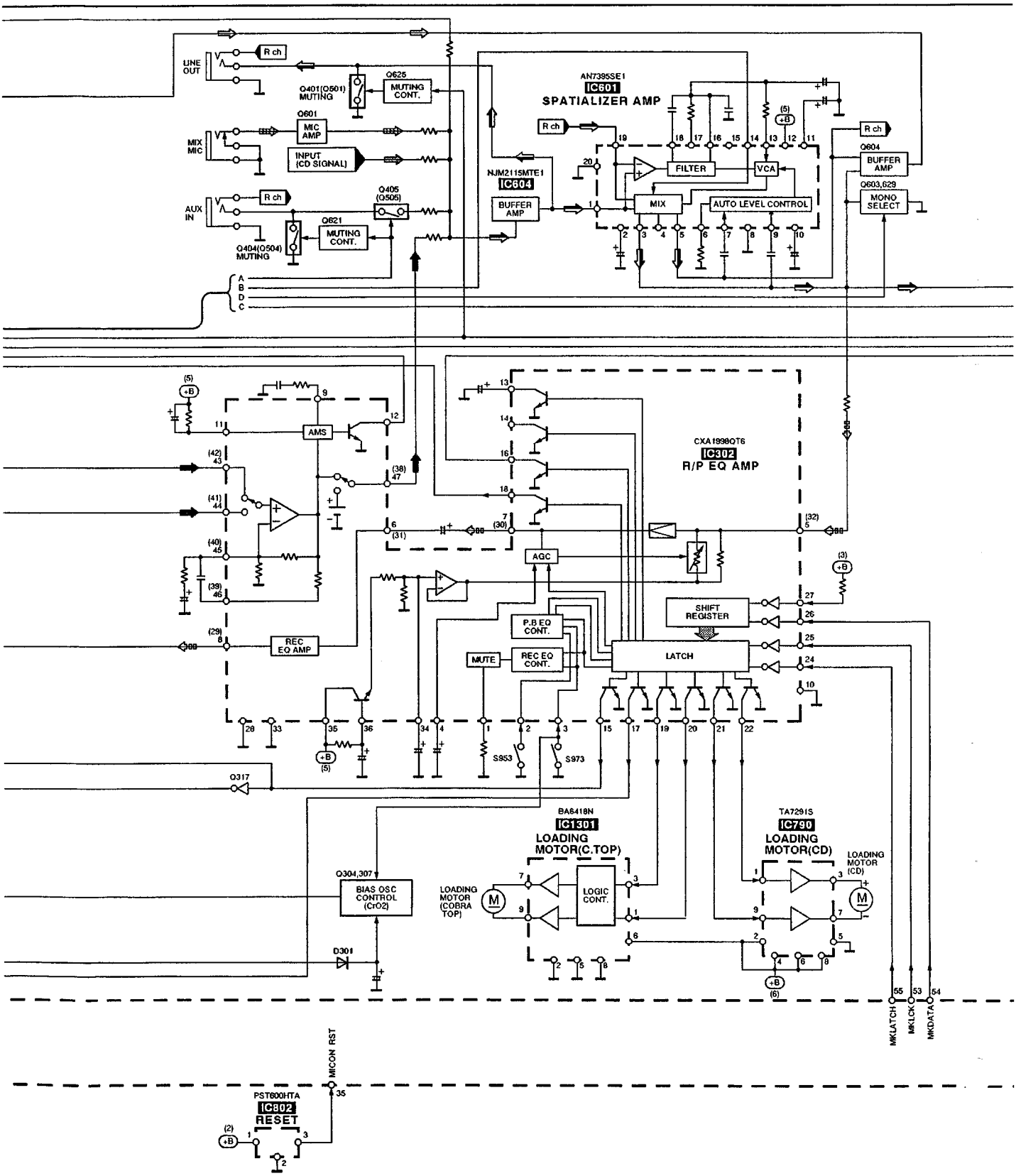


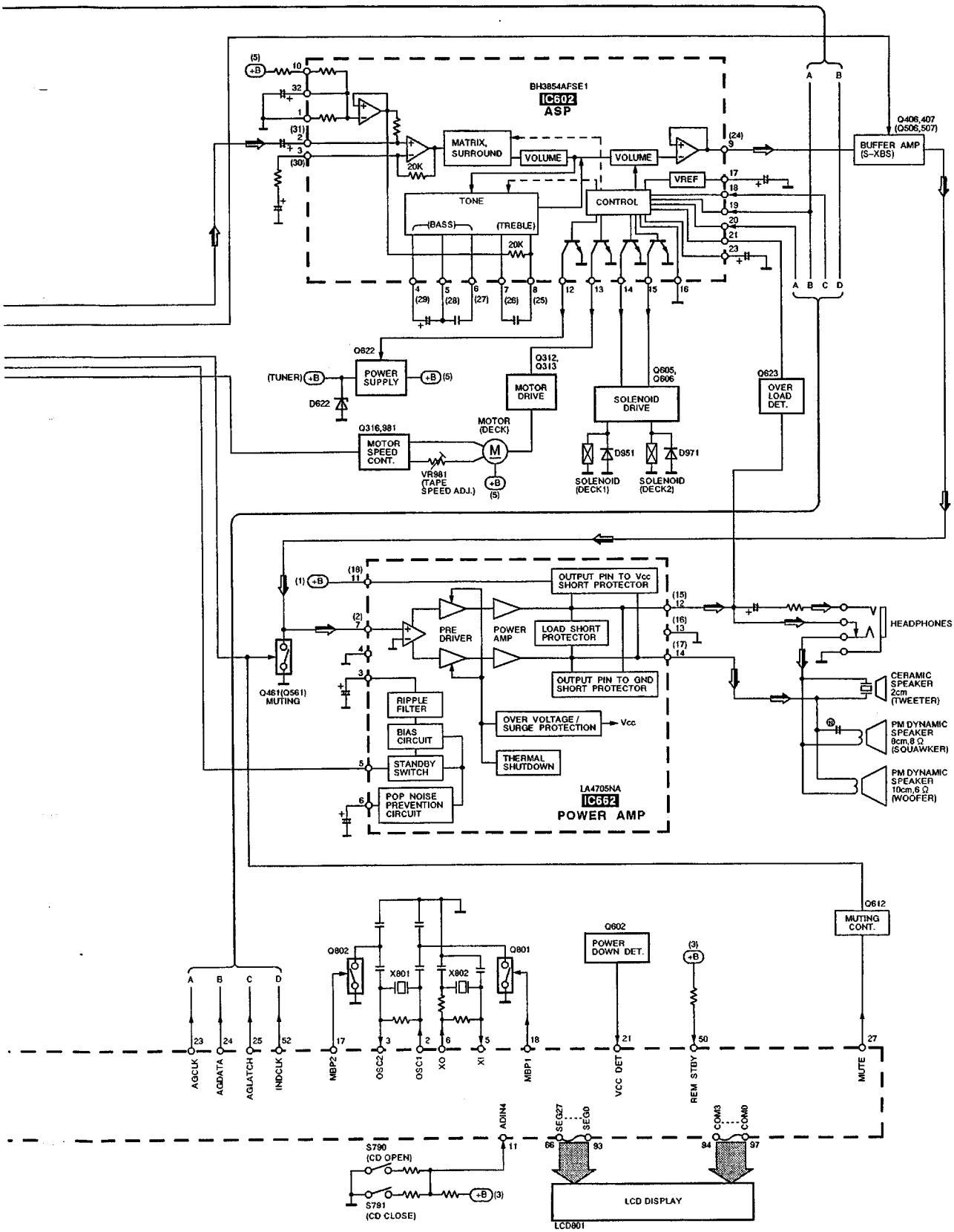
Note:
:CD DIGITAL/ANALOG SIGNAL LINE

■ Block Diagram • Main Unit




LB1403N
IC1002
LED DRIVE
BU2090FSE1
IC1001
DATA SELECT
Vcc
GND
AGDATA
INDCLK
LED1
LED2
LED3
LED4
LED5
LED6
LED7
LEDMUTE
AUX L
SPTMODE
XBS SW
MONO
Q1003
MUTING
D1009
D1016
D1017
D1018
D1019
D1020
D1021
Notes:
1)
: FM SIGNAL LINE
: FM OSC SIGNAL LINE
: AM OSC SIGNAL LINE
: FM/AM Vcap CONTROL SIGNAL LINE
: PLAY BACK SIGNAL LINE
: CD SIGNAL LINE
: MAIN SIGNAL LINE
: REC SIGNAL LINE
: MIC SIGNAL LINE
2) ( ) INDICATES PIN No. OF RIGHT CHANNEL.
D618
D603
(CD1)
(CD2)
Q608
POWER SUPPLY
Q607,609,D602
REGU-LATOR
Q610,618
Q628
Q619
POWER SUPPLY CONT.
Q615
Q660
POWER IN DET.
S81350HGZ
IC603
REGULATOR
Q614
Q620
D605
D606
Q803-805
LED DRIVE
D803,804, D811
DECK1 PLAYBACK HEAD
Q101(Q201) HEAD SELECT (PLAY:ON)
DECK2 R/P HEAD
Q103 (Q203)
Q103(Q203) HEAD SELECT (REC:ON)
R103, C106 (R203, C206)
REC EQ
BA7755A
IC301
R/P SELECT
Q301, 326 SWITCHING (BEAT PROOF)
DECK2 ERASE HEAD
Q302, 325 SWITCHING (BEAT PROOF)
L301
Q305, 306
BIAS OSC
Q303 SWITCHING (REC:ON)
PW CONT.
CDL
TUNER PRESET
CD LINK EDIT
CD AUTO EDIT
RM IN
ADIN2
ADIN1
ADIN0
VREF-
Vss
Voo
VREF+
Z1001 (REMOTE SENSOR)
D1001
KEY MATRIX
S801-815, 1002-1017


LINE OUT
R ch
Q401(Q501) MUTING
Q625 MUTING CONT.
MIX MIC
Q601 MIC AMP
INPUT (CD SIGNAL)
AUX IN
Q405 (Q505)
Q621 MUTING CONT.
Q404(Q504) MUTING
AN7395SE1 IC601 SPATIALIZER AMP
FILTER
VCA
MIX
AUTO LEVEL CONTROL
NJM2115MTE1 IC604 BUFFER AMP
Q604 BUFFER AMP
Q603,629 MONO SELECT
CXA1998QT6 IC302 R/P EQ AMP
AMS
AGC
REC EQ AMP
P.B EQ CONT.
REC EQ CONT.
MUTE
SHIFT REGISTER
LATCH
S953
S973
Q317
BA6418N IC1301 LOADING MOTOR(C.TOP)
LOADING MOTOR (COBRA TOP)
LOGIC CONT.
TA7291S IC790 LOADING MOTOR(CD)
LOADING MOTOR (CD)
Q304,307 BIAS OSC CONTROL (CrO2)
D301
MKLATCH
MKCLOCK
MKDATA
MICON RST
PST600HTA IC802 RESET


BH3854AFSE1
IC602
ASP
MATRIX, SURROUND
VOLUME
VOLUME
VREF
TONE
(BASS)
(TREBLE)
CONTROL
20K
BUFFER AMP (S-XBS)
Q406,407 (Q506,507)
POWER SUPPLY
Q822
D622
(TUNER)
MOTOR DRIVE
Q312, Q313
SOLENOID DRIVE
Q605, Q606
OVER LOAD DET.
Q623
MOTOR (DECK)
Q316,981
MOTOR SPEED CONT.
VR981 (TAPE SPEED ADJ.)
D951
D971
SOLENOID (DECK1)
SOLENOID (DECK2)
OUTPUT PIN TO Vcc SHORT PROTECTOR
PRE DRIVER
POWER AMP
LOAD SHORT PROTECTOR
OUTPUT PIN TO GND SHORT PROTECTOR
Q461(Q561) MUTING
RIPPLE FILTER
BIAS CIRCUIT
STANDBY SWITCH
POP NOISE PREVENTION CIRCUIT
OVER VOLTAGE / SURGE PROTECTION
Vcc
THERMAL SHUTDOWN
LA4705NA
IC662
POWER AMP
HEADPHONES
CERAMIC SPEAKER 2cm (TWEETER)
PM DYNAMIC SPEAKER 8cm,8Ω (SQUAWKER)
PM DYNAMIC SPEAKER 10cm,6Ω (WOOFER)
Q612
MUTING CONT.
Q602
POWER DOWN DET.
Q802
Q801
X801
X802
AGCLK
AGDATA
AGLATCH
INDCLK
MBP2
OSC2
OSC1
XO
XI
MBP1
VCC DET
REM STBY
MUTE
ADIN4
SEG27
SEG0
COM3
COM0
S790 (CD OPEN)
S791 (CD CLOSE)
LCD DISPLAY
LCD801

■ Measurements and Adjustments

< TUNER SECTION >

• ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
• Set power source voltage to 15 V DC. • Set power switch to ON. • Set function switch to TUNER / MW, LW or FM.	• Set volume level to 40. • Output of signal generator should be no higher than necessary to obtain an output reading.

• MW-RF ALIGNMENT

(The parts other than the ones listed below are aligned at the factory before they are supplied. Therefore, alignment of those parts is unnecessary when used for replacement.)

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Shown in Fig. 2)	REMARKS
CONNECTIONS	FREQUENCY				
Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	594 kHz	Tune to signal	Headphones Jack (32Ω) (Fabricate the plug as shown in Fig.1 and then connect the lead wires of the plug to the measuring instrument.)	(*1) L3-1 (MW ANT Coil)	Adjust for maximum output. Adjust L3-1 by moving coil along the ferrite core.
〃	1503 kHz	〃	〃	CT1 (MW ANT Trimmer)	Adjust for maximum output.
(*1) Fix antenna coil with wax after completing alignment.					

• LW-RF ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig. 2)	REMARKS
CONNECTIONS	FREQUENCY				
Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	153 kHz	Tune to signal	Headphones Jack (32Ω) (Fabricate the plug as shown in Fig.1 and then connect the lead wires of the plug to the measuring instrument.)	(*2) L3-2 (LW ANT Coil)	Adjust for maximum output. Adjust L3-2 by moving coil along the ferrite core.
〃	270 kHz	〃	〃	CT2 (LW ANT Trimmer)	Adjust for maximum output.
(*2) Fix antenna coil with wax after completing alignment.					

< CASSETTE DECK SECTION >

• ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
• Set power source voltage to 15 V DC. • Set power switch to ON.	• Set function switch to TAPE. • Set volume control to 40.

• HEAD AZIMUTH ALIGNMENT

TEST TAPE	INDICATOR ELECTRONIC VOLTMETER or OSCILLOSCOPE	ADJUSTMENT	REMARKS
QZZCFM (8 kHz, – 20 dB)	Headphones Jack (32Ω) (Fabricate the plug shown in Fig.1 and then connect the lead wires of the plug to the measuring instrument.)	Azimuth Screw (Shown in Fig. 3, 4.)	1. Insert the test tape (QZZCFM) and start playback in the forward direction. 2. Adjust the azimuth screw for maximum waveform on the oscilloscope and the similar output on L and R channels. 3. When adjusting the azimuth in the reverse direction, repeat the adjustment a several times because of a little slip on the forward direction side.

Caution:

- Please remove the screw-locking bond left on the head base when replacing the azimuth screw.
- After the adjustment, apply screwlock to the azimuth adjusting screw. (Screw-locking bond: RZZOL01)

• TAPE SPEED ALIGNMENT

TEST TAPE	INDICATOR (FREQUENCY COUNTER)	ADJUSTMENT	REMARKS
QZZCWAT (3 kHz, -10 dB)	Headphones Jack (32Ω) (Fabricate the plug shown in Fig.1 and then connect the lead wires of the plug to the measuring instrument.)	VR981 (Shown in Fig.5)	**(Specification : 3000 ± 80 Hz)** 1. Insert a test tape (QZZCWAT) in DECK2 and start playback in forward direction. 2. Adjust **VR981** until the frequency is set to **3000 ± 20 Hz** on the frequency counter. 3. Check that the frequency is set to within **± 40 Hz** for playback in forward direction after playback in reverse direction.

< CD SECTION >

Alignment is unnecessary to the CD section of this unit.

• ALIGNMENT POINTS

Please refer to Printed Circuit Board Diagram for test point locations.

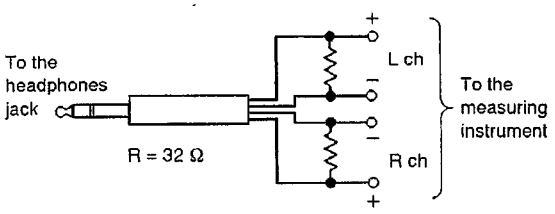


Fig. 1

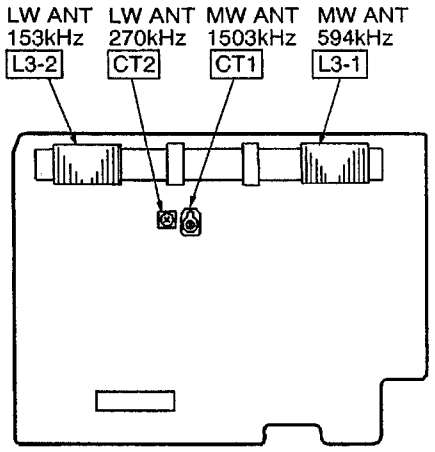


Fig. 2

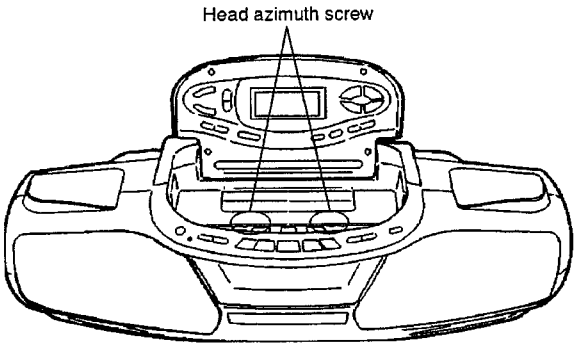


Fig. 3

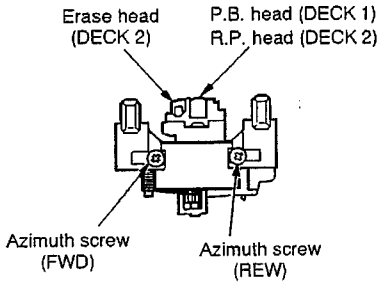


Fig. 4

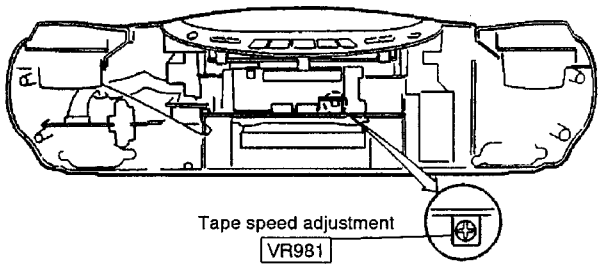
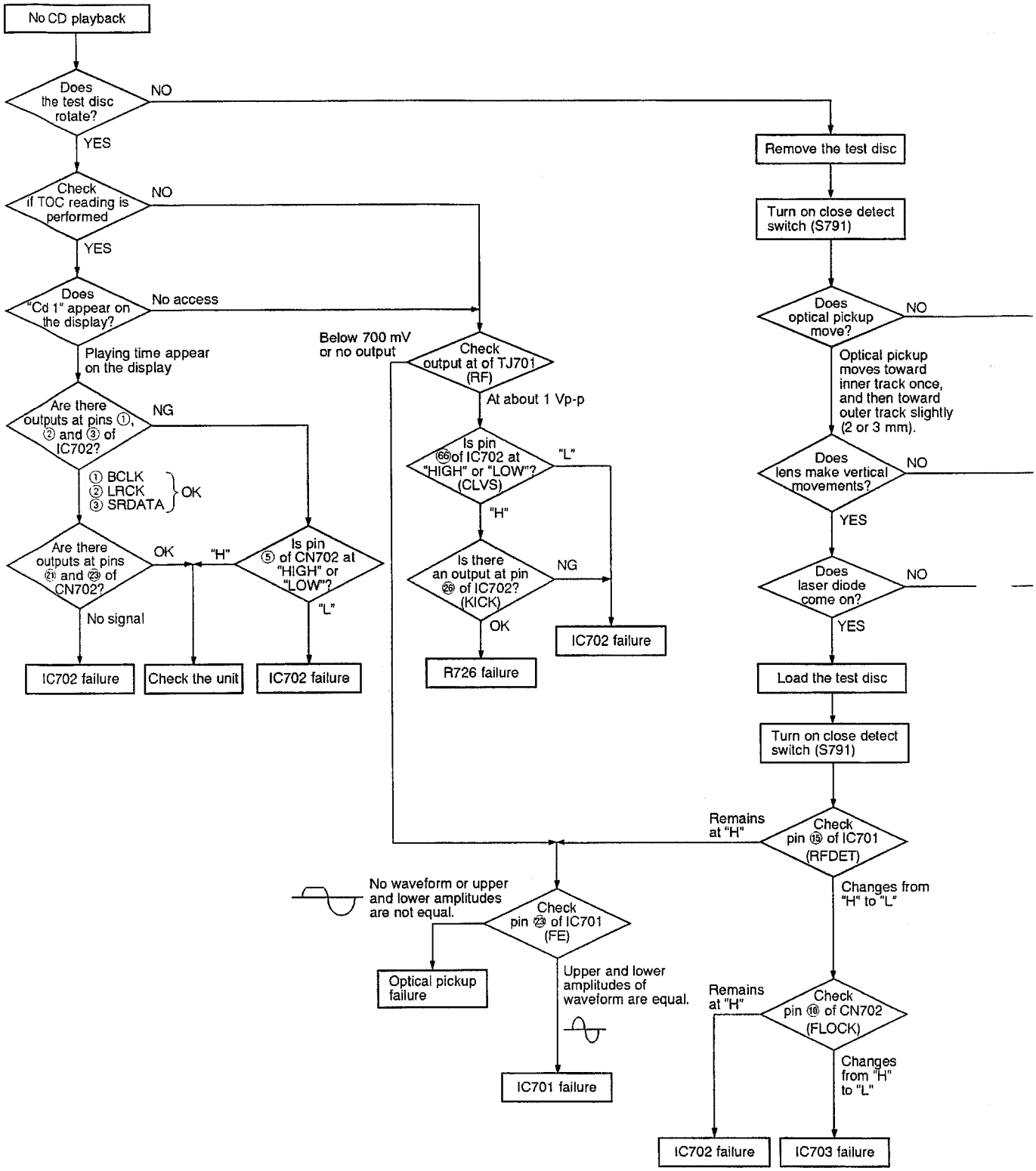
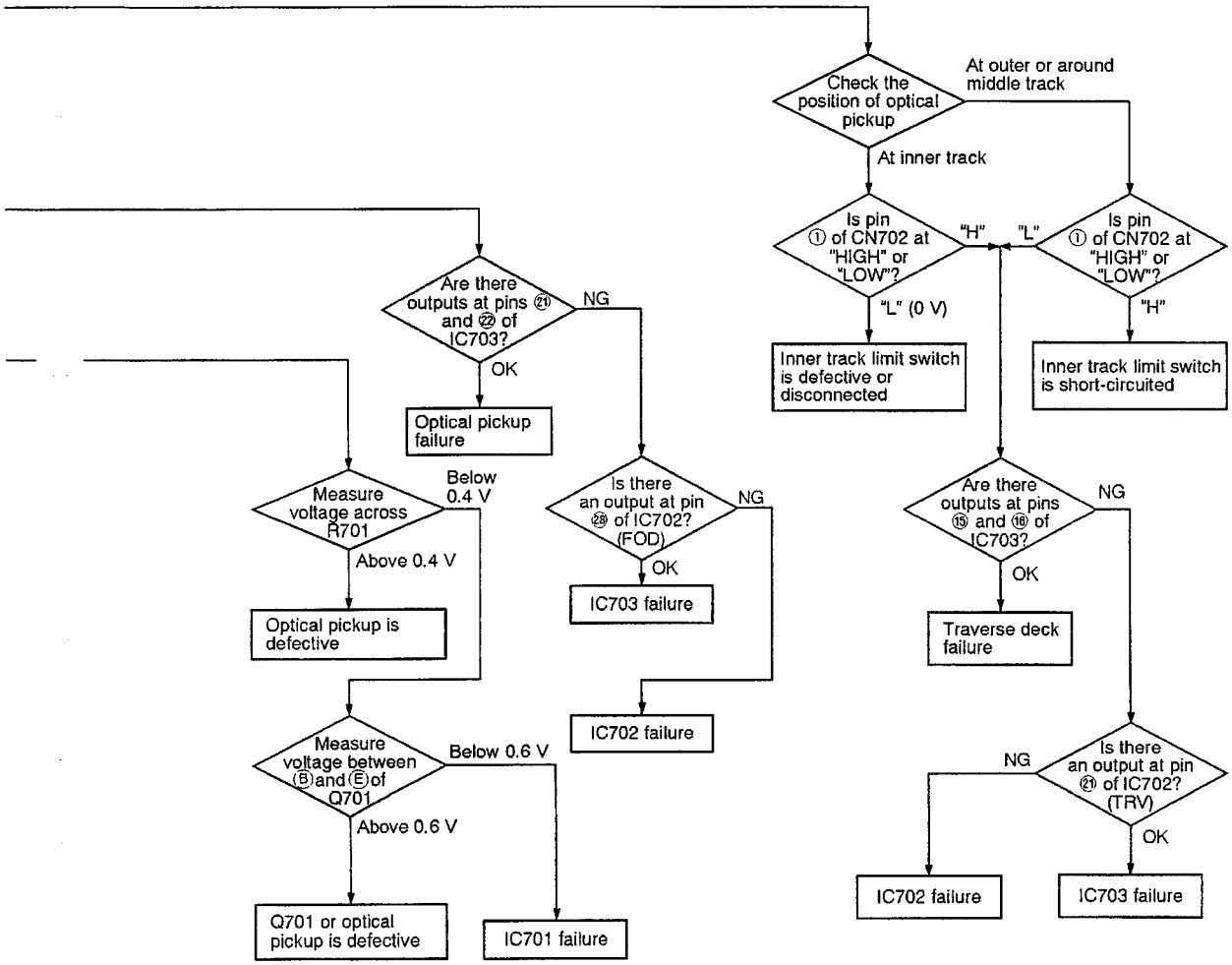


Fig. 5

Troubleshooting Guide




Check the position of optical pickup
At outer or around middle track
At inner track
Is pin ① of CN702 at "HIGH" or "LOW"?
"H"
"L"
Is pin ① of CN702 at "HIGH" or "LOW"?
"L" (0 V)
"H"
Inner track limit switch is defective or disconnected
Inner track limit switch is short-circuited
Are there outputs at pins ㉑ and ㉒ of IC703?
NG
OK
Optical pickup failure
Measure voltage across R701
Below 0.4 V
Above 0.4 V
Optical pickup is defective
Is there an output at pin ㉘ of IC702? (FOD)
NG
OK
IC703 failure
IC702 failure
Are there outputs at pins ⑮ and ⑯ of IC703?
NG
OK
Traverse deck failure
Measure voltage between (B) and (E) of Q701
Below 0.6 V
Above 0.6 V
Q701 or optical pickup is defective
IC701 failure
Is there an output at pin ㉑ of IC702? (TRV)
NG
OK
IC702 failure
IC703 failure

■ Function of IC Terminals

● IC701 (AN8835SBE1)

Pin No.	Terminal Name	I/O	Function
1	PDA	I	PD A channel signal input
2	PDB	I	PD A channel signal input
3	Vcc	I	Power supply connection
4	LPD	I	Laser PD connection
5	LD	O	Power supply for LD driving
6	RF	O	RF amplifier output
7	RFIN	I	RF amplifier input
8	CAGC	I	AGC loop filter connection
9	ARF	O	RF AGC output
10	CSBRT	I	Capacitor connection for RF detection
11	CEA	I	Capacitor connection for HPF amplifier
12	BDO	O	BDO output (H:Drop out)
13	LDON	I	ON/OFF input of LD APC (H: ON, L: OFF)
14	GND	—	Ground connection
15	/RFDET	O	RFDET output (L: RF detecton)
16	CROSS	O	CROSS output
17	DFTR	O	OFTR output
18	VDET	O	VDET output (H: V detection)
19	ENV	O	ENV output
20	TEBPF	I	Vibration detection input
21	CCRS	—	Capacitor connection for LPF
22	TE	O	Tracking error output
23	FE	O	Focus error output
24	TBAL	I	Tracking balance input
25	FBAL	I	Focus balance input
26	VREF	O	VREF output
27	PDE	I	PD E channel signal input
28	PDF	I	PD F channel signal input

● IC702 (MN662740RM1)

Pin No.	Terminal Name	I/O	Function
1	BCLK	O	Bit clock output for serial data (no used, open)
2	LRCK	O	L/R identification signal output (no used, open)
3	SRDATA	O	Serial data output (no used, open)
4	DVDD1	I	Power supply input (for digital circuit)
5	DVss1	—	GND (for digital circuit)
6	TX	O	Digital audio interface signal output
7	MCLK	I	Microprocessor command clock signal input (Latches data at first transition)
8	MDATA	I	Microprocessor command data signal input
9	MLD	I	Microprocessor command load signal input
10	SENSE	O	Sense signal output (OFT, FESL, MAGEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Focus servo feeding signal output (L: Feed)
12	/TLOCK	O	Tracking servo feeding signal output (L: Feed)
13	BLKCK	O	Sub-code block clock signal output (fBLKCK = 75 Hz during normal playback)
14	SQCK	I	External clock signal input for sub-code Q resister
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input (H: Mute)
17	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTVP, FCLV, SQCK)
18	/RST	I	Reset input (L: Reset)
19	SMCK	O	1/2-divided clock signal of crystal oscillating at MSEL = H (fSMCK = 8.4672 MHz) 1/4-divided clock signal of crystal oscillating at MSEL = L (fSMCK = 4.2336 MHz)
20	PMCK	O	1/192-divided clock signal of crystal oscillating (fPMCK = 88.2 kHz) (no used, open)
21	TRV	O	Traverse forced feed output
22	TVD	O	Traverse drive output
23	PC	O	Spindle motor ON signal output (L: ON)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	D/A (drive) output (TVD, ECS, TRD, FOD, FBAL, TBAL) reference voltage input
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detection signal input (H: detection)

Pin No.	Terminal Name	I/O	Function
36	OFT	I	Off-track signal input (H: off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal input (L: detection)
39	BDO	I	Dropout signal input (H: Drop out)
40	LDON	O	Laser on signal output (H: ON)
41	TES	O	Tracking error shunt signal output (H: shunt)
42	PLAY	O	Play signal out (H: PLAY)
43	WVEL	O	Double speed status signal output (H: Double speed) (no used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias (no used, open)
47	DSLF	I/O	DSL loop filter
48	PLLF	I/O	PLL loop filter
49	VCOF	I/O	VCO loop filter (no used, open)
50	AVDD2	I	Power supply input (for analog circuit)
51	AVss2	—	GND (for analog circuit)
52	EFM	O	EFM signal output (no used, open)
53	PCK	O	PLL extraction clock output (fPCK= 4.321 MHz during normal playback) (no used, open)
54	PDO	O	Phase comparison signal of EFM and PCK signals (no used, open)
55	SUBC	O	Sub-code serial data output (no used, open)
56	SBCK	I	Clock input for sub-code serial data (connect to GND)
57	Vss	—	GND
58	X1	I	Crystal oscillating circuit input (f = 16.9344 MHz)
59	X2	O	Crystal oscillating circuit output (f = 16.9344 MHz)
60	VDD	I	Power supply input (for oscillating circuit)
61	BYTCK	O	Byte clock output (no used, open)
62	/CLDCK	O	Sub-code frame clock signal output (fCLDCK = 7.35 kHz during normal playback) (no used, open)
63	FCLK	—	Crystal frame clock signal output (fFCLK = 7.35 kHz, double = 14.7 kHz) (no used, open)
64	IPFLAG	O	Interpolation flag output ("H": Interpolation) (no used, open)
65	FLAG	O	Flag output (no used, open)
66	CLVS	O	Spindle servo phase synchronizing signal output ("H": CLV, "L": rough servo) (no used, open)
67	CRC	O	Sub-code CRC checked output ("H": OK, "L": NG) (no used, open)
68	DEMPH	O	De-emphasis ON signal output ("H": ON) (no used, open)
69	RESY	O	Frame resynchronizing signal output (no used, open)
70	/RST2	I	Reset input through MASH circuit ("L": Reset)
71	/TEST	I	Test input (L: Test)
72	AVDD1	I	Power supply input (for analog circuit)
73	OUTL	O	Left channel audio signal output
74	AVss1	—	GND
75	OUTR	O	Right channel audio signal output
76	RSEL	I	RF signal polarity assignment input (at "H" level: RSEL = "H") (at "L" level: RSEL = "L")
77	CSEL	I	Crystal oscillating frequency designation input ("L": 16.9344 MHz) "H": 33.8688 MHz) (connect to GND)
78	PSEL	I	Test input (normally, "L") (connect to GND)
79	MSEL	I	Output frequency switching for SMCK terminal "H": SMCK = 8.4672 MHz "L": SMCK = 4.2336 MHz (connect to GND)
80	SSEL	I	Output mode switching of SUBQ terminal ("H": Q code buffer mode)

● IC703 (AN8389SE1)

Pin No.	Terminal Name	I/O	Function
1	Vcc	I	Power supply
2	VREF	I	VREF input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	Ground connection
6	NC	—	Ground connection
7	NRESET	I	Reset input
8	GND	—	Ground connection
9	IN2	I	Spindle motor driver (2) input
10	PC2	I	PC2 (power cut) input (H: IN2 power cut)
11	IN1	I	Traverse motor driver (1) input
12	PC1	I	PC1 (power cut) input (H: IN1 power cut)
13	PVcc1	I	Power supply (1) for driver
14	PGND1	—	Ground connection (1) for driver
15	D1-	O	Traverse motor driver (1) reverse-action output
16	D1+	O	Traverse motor driver (1) forward-action output
17	D2-	O	Spindle motor driver (2) reverse-action output
18	D2+	O	Spindle motor driver (2) forward-action output
19	D3-	O	Tracking actuator (3) reverse-action output
20	D3+	O	Tracking actuator (3) forward-action output
21	D4-	O	Focus actuator (4) reverse-action output
22	D4+	O	Focus actuator (4) forward-action output
23	PGND2	—	Ground connection (2) for driver
24	PVcc2	I	Power supply (2) for driver

● IC801 (MND3256REBF1)

Pin No.	Terminal Name	I/O	Function
1	VDD	I	Power supply input (+5 V)
2	OSC2	O	6.0 MHz clock output
3	OSC1	I	6.0 MHz clock input
4	VSS	—	GND
5	XI	I	32.7 kHz clock input
6	XO	O	32.7 kHz clock output
7	VREF –	—	AD converter reference voltage (GND)
8	ADIN7	I	AD converter signal input (DECK2: REC INH F/REC INH R/MODE/HALF)
9	ADIN6	I	AD converter signal input (DECK1: HALF/ MODE, DECK1/2 REEL PULSE)
10	ADIN5	I	AD converter signal input (TPS, DECK1/2; REEL PULSE)
11	ADIN4	I	AD converter signal input (CD TRAY OPEN CLOSE SW)
12	ADIN3	I	AD converter signal input (Power "on" detect)
13	ADIN2	I	AD converter signal input (Operation SW)
14	ADIN1	I	
15	ADIN0	I	
16	VREF +	—	AD converter reference voltage (VDD)
17	MBP2	O	Beat proof control signal output
18	MBP1	O	
19	NC	—	Not used
20	NC	—	Not used
21	VCC DET	I	VCC detect signal input
22	CD L	O	Function control output (CD: L TAPE/TUNER/AUX: I)
23	AGCLK	O	Serial clock output (for ASP)
24	AGDATA	O	Serial data output (for ASP)
25	AGLATCH	O	Latch signal output (for ASP)
26	PW CONT.	O	Power supply circuit control (H: Power ON)
27	MUTE	O	Muting control signal output (L: MUTE)
28	PLL CE	O	PLL tuner strobe signal output
29	PLL CLK	O	PLL tuner clock output
30	PLL DI	O	PLL tuner control data signal output
31	RM IN	I	Remote control signal input
32	BLKCK	I	Sub code block clock input

Pin No.	Terminal Name	I/O	Function
33	STATUS	I	CD status signal input
34	CD RESET	O	CD reset signal output (L: RESET)
35	MICON RST	I	System reset signal input (L: RESET)
36~38	NC	O	CD signal process strobe signal output
39	SQCK	O	CD sub-code reading clock output
40	SUBQ	I	CD sub-code data input
41	NC	I	—
42	TP1	—	—
43	CM	I	1-chip microprocessor mode setting input (L: 1-chip)
44	TLOCK/ TUNED	I	CD tracking clock signal input(L: OK) / tuner receiving signal input (L: TUNED)
45	FLOCK/ST	I	CD focus lock signal input (L: FOCUS OK) / tuner stereo signal input (L: STEREO)
46	REST SW	I	CD traverse position detection switch signal input (H: most inside position)
47, 48	DES1, DES2	I	—
49	SENSE	I	CD sense signal input (H: Detect)
50	REM STBY	I	Remote control sensor power control
51	DES0	—	—
52	INDCLK	O	Serial clock output
53	MKCLK	O	Deck control clock output
54	MKDATA	O	Deck control data output
55	MKLATCH	O	Deck control data latch output
56	CD LINK EDIT	O	LED (1 TRACK) drive output
57	CD AUTO EDIT	O	LED (AUTO) drive output
58	TUNER PRESET	O	LED (PRESET TUNE MODE) drive output
59	NC	—	—
60	MLD	O	CD signal process strobe signal output
61	MDATA	O	CD signal process data output
62	MCLK	O	CD signal process clock signal output
63	—	—	Connect to GND
64,65	NC	—	Not used
66~ 93	SEG27 ~ SEG0	O	LCD segment signal output
94~ 97	COM3~ COM0	I	LCD common signal output
98~ 100	VLC3~ VLC1		LCD bias reference voltage input

■ Replacement Parts List

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y: Supply period for three years from termination of production.
*Warning: This product uses a laser diode. Refer to caution statements on page 2.
*<VRD>: indicates parts that are supplied by Video Recorder Division.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC1	TA7358FMATEL	I. C, FM FRONT END	
IC2	BU2616F-E1	I. C, PLL FREQ. SYNTHESIZER	
IC3	LA1832MS-TEL	I. C, FM/AM IF AMP. DET/AM OSC	
IC301	BA7755A	I. C, R/P SELECT	
IC302	CXA1998QT6	I. C, R/P EQ AMP	
IC601	AN7395SE1	I. C, SPATIALIZER	
IC602	BH3854AFSE1	I. C, ASP	
IC603	S81350HGZ	I. C, REGULATOR	⚠
IC604	NJM2115MT1	I. C, BUFFER AMP	
IC662	LA4705NA	I. C, POWER AMP	
IC701	AN8835SBE1	I. C, SERVO AMP	
IC702	MN662740RM1	I. C, SERVO/DIGITAL PROCESSOR	
IC703	AN8389SE1	I. C, COIL/MOTOR DRIVE	
IC790	TA7291S	I. C, LOADING MOTOR(CD)	
IC801	MND3256REBF1	I. C, SYSTEM CONTROL	
IC802	PST600HTA	I. C, RESET	
IC951, 952	ON2180RLC	I. C, PHOTO INTERRUPTER	
IC971, 972	ON2180RLC	I. C, PHOTO INTERRUPTER	
IC1001	BU2090FSE1	I. C, DATA SELECT	
IC1002	LB1403N	I. C, LED DRIVE	
IC1301	BA6418N	I. C, LOADING MOTOR(T. PANEL)	
		TRANSISTOR(S)	
Q1	2SC3311R	TRANSISTOR	
Q2	2SC3311R	TRANSISTOR	
Q3	2SC2786LTA	TRANSISTOR	
Q4	2SC3313B	TRANSISTOR	
Q5	UN411FTA	TRANSISTOR	
Q8	2SC3311R	TRANSISTOR	
Q10	UN411FTA	TRANSISTOR	
Q11	2SD1450RTA	TRANSISTOR	
Q12	2SC3311R	TRANSISTOR	
Q14	2SC3311R	TRANSISTOR	
Q101	2SJ164QTA	TRANSISTOR	
Q103	2SJ164RTA	TRANSISTOR	
Q201	2SJ164QTA	TRANSISTOR	
Q203	2SJ164RTA	TRANSISTOR	
Q301, 302	2SC2389SSTA	TRANSISTOR	
Q303	2SD1450RTA	TRANSISTOR	
Q304	UN4210-S	TRANSISTOR	
Q305-311	2SC3311R	TRANSISTOR	
Q312	2SD965Q	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
Q313	2SA1309R	TRANSISTOR	
Q314-316	2SC3311R	TRANSISTOR	
Q317	UN411FTA	TRANSISTOR	
Q318, 319	2SC3311R	TRANSISTOR	
Q322	2SC3311R	TRANSISTOR	
Q325, 326	2SC3311R	TRANSISTOR	
Q401	2SC3311R	TRANSISTOR	
Q404	2SC3311R	TRANSISTOR	
Q405	2SJ164QRTA	TRANSISTOR	
Q406	2SK381BCDTA	TRANSISTOR	
Q407	2SC3312RTA	TRANSISTOR	
Q461	2SC3311R	TRANSISTOR	
Q501	2SC3311R	TRANSISTOR	
Q504	2SC3311R	TRANSISTOR	
Q505	2SJ164QRTA	TRANSISTOR	
Q506	2SK381BCDTA	TRANSISTOR	
Q507	2SC3312RTA	TRANSISTOR	
Q561	2SC3311R	TRANSISTOR	
Q601	2SC3312RTA	TRANSISTOR	
Q602	2SC3311R	TRANSISTOR	
Q603	UN4215	TRANSISTOR	
Q604	2SC3311R	TRANSISTOR	
Q605, 606	2SB1030QTA	TRANSISTOR	
Q607	2SB1393AU	TRANSISTOR	⚠
Q608	UN4116	TRANSISTOR	
Q609	2SC3311R	TRANSISTOR	⚠
Q610	2SB1417PTA	TRANSISTOR	
Q611	UN4213	TRANSISTOR	
Q612	UN4111	TRANSISTOR	
Q614	2SB1030QTA	TRANSISTOR	
Q615	UN4213	TRANSISTOR	
Q618	2SC3311R	TRANSISTOR	
Q619	UN411FTA	TRANSISTOR	
Q620	UN4213	TRANSISTOR	
Q621	UN4113	TRANSISTOR	
Q623	2SC3311A-Q	TRANSISTOR	
Q625	UN4113	TRANSISTOR	
Q626	2SA1309R	TRANSISTOR	
Q627	2SC3311R	TRANSISTOR	⚠
Q628	UN4114TA	TRANSISTOR	
Q629	UN411FTA	TRANSISTOR	
Q630	2SC3311R	TRANSISTOR	⚠
Q660	UN4213AITA	TRANSISTOR	
Q701	2SB709S	TRANSISTOR	
Q801, 802	2SC3311R	TRANSISTOR	
Q803-805	UN4210-S	TRANSISTOR	

Ref.No.	Part No.	Part Name & Description	Remarks
Q806	2SC3311AR	TRANSISTOR	
Q807	2SD1450RTA	TRANSISTOR	
Q981	2SK381BCDTA	TRANSISTOR	
Q1003	2SC3311R	TRANSISTOR	
		DIODE(S)	
D1	KV1360NT	DIODE	
D3	KV1583BMTL	DIODE	
D4	KV1360NT	DIODE	
D8	MA165	DIODE	
D10	MA165	DIODE	
D11	RVD1SS135TA	DIODE	
D301	MA165	DIODE	
D402, 403	MA165	DIODE	
D502, 503	MA165	DIODE	
D601	MA165	DIODE	
D602	MA4091LTA	DIODE	⚠
D603	RL1N4003N02	DIODE	
D604-606	MA165	DIODE	
D607	MA4075TA	DIODE	⚠
D608-610	MA165	DIODE	
D613	MA165	DIODE	
D616	MA165	DIODE	
D618	RL1N4003N02	DIODE	
D620	MA165	DIODE	
D622	RVDMTZ5R1BTA	DIODE	⚠
D623	1SR139400TA	DIODE	
D627	RVDMTZ12BTA	DIODE	⚠
D630	MA165	DIODE	
D631	RVDMTZ5R1BTA	DIODE	
D801	MA165	DIODE	
D803, 804	LN873RPXTA3	LED	
D807	MA4100MTA	DIODE	
D811	LN29RPXTX9DK	LED	
D901-904	1N5402B-M21	DIODE	⚠
D951	MA165	DIODE	
D971	MA165	DIODE	
D1001	RVDMTZ8R2BTA	DIODE	
D1005-1007	LNJ301MPUJAD	LED	
D1008	LN086WP38	LED	
D1009	LNKD710036F	LED(D1009-D1015)	
D1016-1021	MA165	DIODE	
D1022-1024	LNJ301MPUJAD	LED	
		VARIABLE RESISTOR(S)	
VR981	RRN6B05B73TA	V.R, TAPE SPEED	
		COMPONENT COMBINATION(S)	
Z1	RXABPWB6A	COMPONENT COMBINATION	

Ref.No.	Part No.	Part Name & Description	Remarks
Z301	EXBF7L355SYV	COMPONENT COMBINATION	
Z302	EXBF6L306SYV	COMPONENT COMBINATION	
Z801	XAMR135	LAMP	
Z971	EXBF7L355SYV	COMPONENT COMBINATION	
Z1001	RCD12042TE	REMOTE SENSOR	
		COIL(S)	
L1	RL02B011-T	COIL	
L2	RL01B004-T	COIL	
L3	RLV6C013-0	COIL	
L4	ELEXT101KA9	COIL	
L5	RLQA8R2JT1-Y	COIL	
L8	ELEXT101KA9	COIL	
L301	RL08B003-K	COIL	
L302	RLQA470JT1-Y	COIL	
L303	RLQB470KTA-Y	COIL	
L401	RLL500050T-Y	COIL	
L501	RLL500050T-Y	COIL	
L601	RLQA470JT1-Y	COIL	
L602-605	RLL500050T-Y	COIL	
L607	RLL500050T-Y	COIL	
L608	RLQA470JT1-Y	COIL	
L801	ELEXT2R2KA9	COIL	
L803	ELEXT2R2KA9	COIL	
L901, 902	RLL500050T-Y	COIL	⚠
L1301	RLQB470KTA-Y	COIL	
		TRANSFORMER(S)	
T1	RLI22019-T	TRANSFORMER	
T901	RTP1L1B007-W	POWER TRANSFORMER	⚠
		FILTER(S)	
CF1, 2	RLFFE7MLA02D	CERAMIC FILTER	
CF3	RLFDFT14AD	DISCRIMINATOR	
		OSCILLATOR(S)	
X1	RSXZ456KM01	OSCILLATOR(456KHz)	
X2	RSXC7M20S04T	OSCILLATOR(7.2MHz)	
X701	RSXZ16M9M01T	OSCILLATOR(16.9344MHz)	
X801	RSXZ6M00M01T	OSCILLATOR(6MHz)	
X802	RSXD32K7S03	OSCILLATOR(32.7KHz)	
		FUSE(S)	
F901	XBA2C40TB0	FUSE 250V T4A	⚠
		SWITCH(ES)	

Ref. No.	Part No.	Part Name & Description	Remarks
S701	RSM0006-P	SW, REST	
S790	RSH1A005	SW, OPEN	
S791	RSH1A005	SW, CLOSE	
S801	EVQ21405R	SW, S-XBS	
S802	EVQ21405R	SW, AUX	
S803	EVQ21405R	SW, TIMER	
S804	EVQ21405R	SW, R. SEARCH/-	
S805	EVQ21405R	SW, F. SEARCH/+	
S806	EVQ21405R	SW, MEMORY. TUNE/CD	
S807	EVQ21405R	SW, CLOCK ADJUST	
S808	EVQ21405R	SW, PRESET TUNE MODE	
S809	EVQ21405R	SW, REC/REC PAUSE	
S810	EVQ21405R	SW, TAPE EDIT	
S811	EVQ21405R	SW, CD REC LEVEL	
S812	EVQ21405R	SW, CD REC MODE	
S813	EVQ21405R	SW, PRESET EQ	
S814	EVQ21405R	SW, TIMER ADJUST	
S815	EVQ21405R	SW, SPATIALIZER/DEMO	
S901	RJJ1SE01-H	SW, AC/DC (JK901)	⚠
S951	RSH1A018-1U	SW, MODE (DECK1)	
S952	RSH1A019-2U	SW, HALF (DECK1)	
S953	RSH1A019-2U	SW, ATS/Cro2 (DECK1)	
S971	RSH1A018-1U	SW, MODE (DECK2)	
S972	RSH1A019-2U	SW, HALF (DECK2)	
S973	RSH1A019-2U	SW, ATS/Cro2 (DECK2)	
S974	RSH1A019-2U	SW, R. REC INH (DECK2)	
S975	RSH1AD19-2U	SW, F. REC INH (DECK2)	
S1002	EVQ21405R	SW, VOLUME -	
S1003	EVQ21405R	SW, VOLUME +	
S1004	EVQ21405R	SW, TAPE STOP	
S1005	EVQ21405R	SW, TAPE PLAY	
S1006	EVQ21405R	SW, TUNER/BAND	
S1007	EVQ21405R	SW, CD PLAY/PAUSE	
S1008	EVQ21405R	SW, CD STOP/CLEAR	
S1009	EVQ21405R	SW, TOP PANEL CLOSE	
S1010	EVQ21405R	SW, TOP PANEL OPEN	
S1011	EVQ21405R	SW, POWER	
S1012	EVQ21405R	SW, DECK1 OPEN/CLOSE	
S1013	EVQ21405R	SW, REW (TPS)	
S1014	EVQ21405R	SW, DECK 1/2	
S1015	EVQ21405R	SW, FF (TPS)	
S1016	EVQ21405R	SW, DECK2 OPEN/CLOSE	
S1017	EVQ21405R	SW, CD OPEN/CLOSE	
		CONNECTOR (S)	
CP601	RJT060B04	CONNECTOR (4P)	
CP607	RJT029W02V-1	CONNECTOR (2P)	
CP608	RJT029W002-1	CONNECTOR (2P)	
CP790	RJP6G17ZA	CONNECTOR (6P)	
CP981	RJT094W03	SOCKET (3P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CP901	RJT029W003-1	CONNECTOR (3P)	
CP902	RJT029W006-1	CONNECTOR (6P)	
CP951	RJT071H09A	CONNECTOR (9P)	
CP971	RJT071H09A	CONNECTOR (9P)	
CP1001	RJP6G18ZA	CONNECTOR (6P)	
CP1002	RJT057W009-1	CONNECTOR (9P)	
CP1003	RJP5G18ZA	CONNECTOR (5P)	
CP1004	RJT057W009-1	CONNECTOR (9P)	
CS301, 302	RJS1A6805	CONNECTOR (5P)	
CS602	RJS1A5210	CONNECTOR (10P)	⟨M⟩
CS702	RJS1A6723-Q	CONNECTOR (23P)	
CS801	RJS1A6838	CONNECTOR (38P)	
CS951	RJU071H09M	SOCKET (9P)	
CS971	RJU071H09M	SOCKET (9P)	
CS981	SJS50378JQ	SOCKET (3P)	
CS1002	RJU057W009	SOCKET (9P)	
CS1004	RJU057W009	SOCKET (9P)	
CS1301	RJP4G17ZA	SOCKET (4P)	
CS8011	RJS1A6838	SOCKET (38P)	
CN701	RJU035T016	CONNECTOR (16P)	
CN702	RJS1A6723-1Q	CONNECTOR (23P)	
		VARIABLE CAPACITOR (S)	
CT1	RCV10AF1T-S	TRIMMER CAPACITOR	
CT2	ECRLA030E53R	TRIMMER CAPACITOR	
		FUSE HOLDER (S)	
FH901, 902	EYF52BC	FUSE HOLDER	
		DISPLAY	
LCD801	RSL5150-L	LCD	
		JACK (S)	
JK601	RJJ33MR01-H	MIX MIC	
JK602	RJJ33T01	LINE OUT	
JK603	RJJ33T01	AUX IN	
JK604	RJJ37TK01-C	HEADPHONES	
JK901	RJJ1SE01-H	AC INLET (S901)	⚠

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R1	ERDS2TJ104	1/4W 100K
R2	ERDS2TJ332	1/4W 3.3K
R3	ERDS2TJ104	1/4W 100K
R5	ERDS2TJ103	1/4W 10K
R6	ERDS2TJ152	1/4W 1.5K
R7	ERDS2TJ330	1/4W 33
R8	ERDS2TJ104	1/4W 100K
R9	ERDS2TJ471	1/4W 470
R10	ERDS2TJ102	1/4W 1K
R11	ERDS2TJ103	1/4W 10K
R12	ERDS2TJ223	1/4W 22K
R13	ERDS2TJ153	1/4W 15K
R14	ERDS2TJ103	1/4W 10K
R15	ERDS2TJ223	1/4W 22K
R17	ERDS2TJ103	1/4W 10K
R18	ERDS2TJ223	1/4W 22K
R19	ERDS2TJ101	1/4W 100
R20	ERDS2TJ151	1/4W 150
R22	ERDS2TJ331	1/4W 330
R24	ERDS2TJ471	1/4W 470
R25	ERDS2TJ104	1/4W 100K
R26, 27	ERDS2TJ102	1/4W 1K
R28	ERDS2TJ334	1/4W 330K
R29	ERDS2TJ331	1/4W 330
R30	ERDS2TJ822	1/4W 8.2K
R31	ERDS2TJ472	1/4W 4.7K
R36, 37	ERDS2TJ223	1/4W 22K
R40	ERDS2TJ105T	1/4W 1M
R41	ERDS2TJ301T	1/4W 300
R42	ERDS2TJ103	1/4W 10K
R43, 44	ERDS2TJ222	1/4W 2.2K
R47	ERDS2TJ332	1/4W 3.3K
R49	ERDS2TJ103	1/4W 10K
R52	ERDS2TJ223	1/4W 22K
R54	ERDS2TJ222	1/4W 2.2K
R55, 56	ERDS2TJ273	1/4W 27K
R57	ERDS2TJ103	1/4W 10K
R59	ERDS2TJ471	1/4W 470
R61	ERDS2TJ103	1/4W 10K
R62	ERDS2TJ471	1/4W 470
R63	ERDS2TJ105T	1/4W 1M
R64	ERDS2TJ332	1/4W 3.3K
R65	ERDS2TJ470	1/4W 47
R66	ERDS2TJ332	1/4W 3.3K
R101	ERDS2TJ680T	1/4W 68
R102	ERDS2TJ273	1/4W 27K
R103	ERDS2TJ562	1/4W 5.6K
R104	ERDS2TJ104	1/4W 100K
R105	ERDS2TJ182	1/4W 1.8K
R106	ERDS2TJ332	1/4W 3.3K
R109	ERDS2TJ152	1/4W 1.5K
R110	ERDS2TJ123	1/4W 12K
R201	ERDS2TJ680T	1/4W 68
R202	ERDS2TJ273	1/4W 27K
R203	ERDS2TJ562	1/4W 5.6K
R204	ERDS2TJ104	1/4W 100K
R205	ERDS2TJ182	1/4W 1.8K
R206	ERDS2TJ332	1/4W 3.3K
R209	ERDS2TJ152	1/4W 1.5K
R210	ERDS2TJ123	1/4W 12K
R301	ERDS2TJ103	1/4W 10K
R302-304	ERDS2TJ152	1/4W 1.5K
R305	ERDS2TJ103	1/4W 10K
R306	ERDS2TJ752T	1/4W 7.5K
R307	ERDS2TJ822	1/4W 8.2K
R308 ⚠	ERD2FCVJ4R7T	1/4W 4.7
R309-311	ERDS2TJ472	1/4W 4.7K
R312	ERDS2TJ334	1/4W 330K
R313	ERDS2TJ123	1/4W 12K
R314	ERDS2TJ472	1/4W 4.7K
R315	ERDS2TJ102	1/4W 1K
R316	ERDS2TJ470	1/4W 47
R318	ERDS2TJ335T	1/4W 3.3M
R319-322	ERDS2TJ104	1/4W 100K
R323, 324	ERDS2TJ273	1/4W 27K
R325	ERDS2TJ471	1/4W 470
R326	ERDS2TJ103	1/4W 10K
R327	ERDS2TJ472	1/4W 4.7K
R328	ERDS2TJ103	1/4W 10K
R329	ERDS2TJ681	1/4W 680
R330	ERDS2TJ563	1/4W 56K
R331, 332	ERDS2TJ104	1/4W 100K
R333	ERDS2TJ472	1/4W 4.7K
R334	ERDS2TJ153	1/4W 15K
R335	ERDS2TJ470	1/4W 47
R336	ERDS2TJ563	1/4W 56K
R337	ERDS2TJ104	1/4W 100K
R338	ERDS2TJ223	1/4W 22K
R339	ERDS2TJ104	1/4W 100K
R340	ERDS2TJ563	1/4W 56K
R341	ERDS2TJ470	1/4W 47
R342	ERDS2TJ104	1/4W 100K
R343	ERDS2TJ563	1/4W 56K
R344	ERDS2TJ470	1/4W 47
R345, 346	ERDS2TJ102	1/4W 1K
R347	ERDS2TJ222	1/4W 2.2K
R348	ERDS2TJ103	1/4W 10K
R349	ERDS2TJ224T	1/4W 220K
R350	ERDS2TJ334	1/4W 330K
R355, 356	ERDS2TJ153	1/4W 15K
R366	ERDS2TJ183T	1/4W 18K
R368	ERX1SJ470E	1W 47
R369	ERDS2TJ334	1/4W 330K
R401	ERDS2TJ333	1/4W 33K
R403	ERDS2TJ223	1/4W 22K
R408	ERDS2TJ103	1/4W 10K
R409	ERDS2TJ472	1/4W 4.7K
R410, 411	ERDS2TJ473	1/4W 47K
R413	ERDS2TJ181T	1/4W 180
R416	ERDS2TJ104	1/4W 100K
R417	ERDS2TJ221	1/4W 220
R420	ERDS2TJ333	1/4W 33K
R421	ERDS2TJ103	1/4W 10K
R422	ERDS2TJ105T	1/4W 1M
R423	ERDS2TJ821	1/4W 820
R424	ERDS2TJ124T	1/4W 120K
R425	ERDS2TJ682T	1/4W 6.8K
R428	ERDS2TJ472	1/4W 4.7K
R429	ERDS2TJ223	1/4W 22K
R431	ERDS2TJ821	1/4W 820
R461, 462	ERDS2TJ2R2T	1/4W 2.2
R464	ERDS2TJ682T	1/4W 6.8K
R465	ERDS2TJ472	1/4W 4.7K
R501	ERDS2TJ333	1/4W 33K
R503	ERDS2TJ223	1/4W 22K
R508	ERDS2TJ103	1/4W 10K
R509	ERDS2TJ472	1/4W 4.7K
R510, 511	ERDS2TJ473	1/4W 47K
R513	ERDS2TJ181T	1/4W 180
R516	ERDS2TJ104	1/4W 100K
R517	ERDS2TJ221	1/4W 220
R520	ERDS2TJ333	1/4W 33K
R521	ERDS2TJ103	1/4W 10K
R523	ERDS2TJ821	1/4W 820
R524	ERDS2TJ124T	1/4W 120K
R525	ERDS2TJ682T	1/4W 6.8K
R528	ERDS2TJ472	1/4W 4.7K
R529	ERDS2TJ223	1/4W 22K
R531	ERDS2TJ821	1/4W 820
R561, 562	ERDS2TJ2R2T	1/4W 2.2
R564	ERDS2TJ682T	1/4W 6.8K
R565	ERDS2TJ472	1/4W 4.7K
R601	ERDS2TJ334	1/4W 330K
R602	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R603	ERDS2TJ180T	1/4W 18
R604	ERDS2TJ473	1/4W 47K
R605-607	ERDS2TJ334	1/4W 330K
R608	ERDS2TJ273	1/4W 27K
R609	ERDS2TJ332	1/4W 3.3K
R610	ERDS2TJ273	1/4W 27K
R611	ERDS2TJ332	1/4W 3.3K
R612, 613	ERDS2TJ1R2	1/4W 1.2
R614	ERDS2TJ103	1/4W 10K
R615	ERDS2TJ331	1/4W 330
R616	ERDS2TJ472	1/4W 4.7K
R617	ERDS2TJ122	1/4W 1.2K
R618	ERDS2TJ103	1/4W 10K
R619, 620	ERDS2TJ391	1/4W 390
R621	ERDS2TJ102	1/4W 1K
R622	ERDS2TJ151	1/4W 150
R623	ERDS2TJ821	1/4W 820
R624	ERDS2TJ331	1/4W 330
R625	ERDS2TJ103	1/4W 10K
R626	ERDS2TJ122	1/4W 1.2K
R627	ERDS2TJ221	1/4W 220
R628	ERDS2TJ472	1/4W 4.7K
R629	ERDS2TJ271	1/4W 270
R630	ERDS2TJ474	1/4W 470K
R631	ERDS2TJ1R2	1/4W 1.2
R633, 634	ERDS2TJ330	1/4W 33
R635 ⚠	ERDS1FVJ101T	1/2W 100
R636, 637	ERDS2TJ102	1/4W 1K
R638, 639	ERDS2TJ103	1/4W 10K
R640, 641	ERDS2TJ472	1/4W 4.7K
R642	ERDS2TJ682T	1/4W 6.8K
R643, 644	ERDS2TJ102	1/4W 1K
R645	ERDS2TJ472	1/4W 4.7K
R646	ERDS2TJ273	1/4W 27K
R647	ERDS2TJ472	1/4W 4.7K
R648	ERDS2TJ103	1/4W 10K
R649	ERDS2TJ561	1/4W 560
R650	ERDS2TJ123	1/4W 12K
R652, 653	ERDS2TJ103	1/4W 10K
R654, 655	ERDS2TJ472	1/4W 4.7K
R657	ERDS2TJ104	1/4W 100K
R658	ERDS2TJ393	1/4W 39K
R659	ERDS2TJ302	1/4W 3K
R660	ERDS2TJ102	1/4W 1K
R661	ERDS2TJ472	1/4W 4.7K
R662	ERDS2TJ822	1/4W 8.2K
R663	ERDS2TJ472	1/4W 4.7K
R664	ERDS2TJ101	1/4W 100
R665	ERDS2TJ105T	1/4W 1M
R666	ERDS2TJ222	1/4W 2.2K
R667	ERDS2TJ103	1/4W 10K
R668	ERDS2TJ333	1/4W 33K

Ref. No.	Part No.	Values & Remarks
R669	ERDS2TJ105T	1/4W 1M
R670	ERDS2TJ822	1/4W 8.2K
R672	ERDS2TJ103	1/4W 10K
R673	ERDS2TJ102	1/4W 1K
R674 ⚠	ERDS1FVJ101T	1/2W 100
R675	ERDS2TJ103	1/4W 10K
R676	ERDS2TJ182	1/4W 1.8K
R677	ERDS2TJ682T	1/4W 6.8K
R678 ⚠	ERD2FCVG220T	1/4W 22
R679	ERDS2TJ101	1/4W 100
R680-682	ERDS2TJ103	1/4W 10K
R683	ERDS2TJ474	1/4W 470K
R684, 685	ERDS2TJ223	1/4W 22K
R686, 687	ERDS2TJ103	1/4W 10K
R688, 689	ERDS2TJ102	1/4W 1K
R692	ERDS2TJ472	1/4W 4.7K
R701	ERJ6GEYJ4R7V	1/10W 4.7
R703	ERJ6GEYJ823	1/10W 82K
R704	ERJ6GEYJ102A	1/10W 1K
R705	ERJ6GEYJ103V	1/10W 10K
R706	ERJ6GEYJ102A	1/10W 1K
R707	ERJ6GEYJ474V	1/10W 470K
R708	ERJ6GEYJ154V	1/10W 150K
R709	ERJ6GEYJ683V	1/10W 68K
R711	ERJ6GEYJ154V	1/10W 150K
R712	ERJ6GEYJ221V	1/10W 220
R717-720	ERJ6GEYJ102A	1/10W 1K
R721	ERJ6GEYJ101V	1/10W 100
R722	ERJ6GEYJ563V	1/10W 56K
R723	ERJ6GEYJ182V	1/10W 1.8K
R724	ERJ6GEYJ333V	1/10W 33K
R725	ERJ6GEYJ472V	1/10W 4.7K
R726	ERJ6GEYJ473V	1/10W 47K
R727	ERJ6GEYJ822V	1/10W 8.2K
R728	ERJ6GEYJ103V	1/10W 10K
R731	ERJ6GEYJ822V	1/10W 8.2K
R734-736	ERJ6GEYJ101V	1/10W 100
R738	ERJ6GEYJ223V	1/10W 22K
R741-743	ERJ6GEYJ562V	1/10W 5.6K
R744	ERJ6GEYJ103V	1/10W 10K
R745	ERJ6GEYJ155V	1/10W 1.5M
R748	ERJ6GEYJ182V	1/10W 1.8K
R749	ERJ6GEYJ682V	1/10W 6.8K
R750, 751	ERJ6GEYJ473V	1/10W 47K
R752	ERJ8GEYJ220V	1/8W 22
R770, 771	ERJ6GEYJ155V	1/10W 1.5M
R772	ERJ6GEYJ273V	1/10W 27K
R801, 802	ERDS2TJ332	1/4W 3.3K
R803	ERDS2TJ333	1/4W 33K
R804, 805	ERDS2TJ823T	1/4W 82K
R806	ERDS2TJ104	1/4W 100K
R807	ERDS2TJ105T	1/4W 1M

Ref. No.	Part No.	Values & Remarks
R808	ERDS2TJ822	1/4W 8.2K
R809	ERDS2TJ334	1/4W 330K
R810, 811	ERDS2TJ102	1/4W 1K
R812-818	ERDS2TJ472	1/4W 4.7K
R819	ERDS2TJ124T	1/4W 120K
R820	ERDS2TJ472	1/4W 4.7K
R821	ERDS2TJ103	1/4W 10K
R822	ERDS2TJ222	1/4W 2.2K
R823-825	ERDS2TJ103	1/4W 10K
R826	ERDS2TJ474	1/4W 470K
R827	ERDS2TJ472	1/4W 4.7K
R828	ERDS2TJ102	1/4W 1K
R829, 830	ERDS2TJ104	1/4W 100K
R831, 832	ERDS2TJ102	1/4W 1K
R835	ERDS2TJ103	1/4W 10K
R837	ERDS2TJ102	1/4W 1K
R838, 839	ERDS2TJ472	1/4W 4.7K
R841	ERDS2TJ472	1/4W 4.7K
R846, 847	ERDS2TJ681	1/4W 680
R848	ERDS2TJ103	1/4W 10K
R849	ERDS2TJ183T	1/4W 18K
R850	ERDS2TJ104	1/4W 100K
R854	ERDS2TJ681	1/4W 680
R856, 857	ERDS2TG103T	1/4W 10K
R859, 860	ERDS2TJ102	1/4W 1K
R861	ERDS2TJ122	1/4W 1.2K
R862	ERDS2TJ182	1/4W 1.8K
R863	ERDS2TJ222	1/4W 2.2K
R864	ERDS2TJ272T	1/4W 2.7K
R865	ERDS2TJ392T	1/4W 3.9K
R866	ERDS2TJ682T	1/4W 6.8K
R867	ERDS2TG103T	1/4W 10K
R951	ERDS2TJ681	1/4W 680
R953, 954	ERDS2TJ393	1/4W 39K
R971	ERDS2TJ681	1/4W 680
R973, 974	ERDS2TJ393	1/4W 39K
R981	ERDS2TJ334	1/4W 330K
R982	ERDS2TJ123	1/4W 12K
R983	ERDS2TJ133T	1/4W 13K
R984	ERDS2TJ332	1/4W 3.3K
R985	ERDS2TJ103	1/4W 10K
R1003	ERDS2TJ222	1/4W 2.2K
R1004	ERDS2TJ272T	1/4W 2.7K
R1005	ERDS2TJ392T	1/4W 3.9K
R1006	ERDS2TJ682T	1/4W 6.8K
R1007	ERDS2TJ103	1/4W 10K
R1008	ERDS2TJ183T	1/4W 18K
R1009	ERDS2TJ563	1/4W 56K
R1020, 1021	ERDS2TJ222	1/4W 2.2K
R1022	ERDS2TJ103	1/4W 10K
R1023	ERDS2TJ272T	1/4W 2.7K
R1024	ERDS2TJ103	1/4W 10K

Ref. No.	Part No.	Values & Remarks
R1025	ERDS2TJ104	1/4W 100K
R1026	ERDS2TJ561	1/4W 560
R1028	ERDS2TJ102	1/4W 1K
R1030	ERDS2TJ102	1/4W 1K
R1032	ERDS2TJ102	1/4W 1K
R1034	ERDS2TJ102	1/4W 1K
R1036	ERDS2TJ102	1/4W 1K
R1038	ERDS2TJ561	1/4W 560
R1040, 1041	ERDS2TJ102	1/4W 1K
R1042	ERDS2TJ122	1/4W 1.2K
R1043	ERDS2TJ182	1/4W 1.8K
R1044	ERDS2TJ122	1/4W 1.2K
R1045	ERDS2TJ182	1/4W 1.8K
R1046	ERDS2TJ222	1/4W 2.2K
R1047	ERDS2TJ272T	1/4W 2.7K
R1048	ERDS2TJ392T	1/4W 3.9K
R1049	ERDS2TJ151	1/4W 150
R1057	ERDS2TJ151	1/4W 150
		CHIP JUMPER(S)
RJ701-704	ERJ8GEY0R00A	CHIP JUMPER
RJ707	ERJ8GEY0R00A	CHIP JUMPER
RJ709	ERJ8GEY0R00A	CHIP JUMPER
RJ714-717	ERJ8GEY0R00A	CHIP JUMPER
RJ721-731	ERJ6GEY0R00A	CHIP JUMPER
		TEST JUMPERS
TJ701, 702	EYF8CU	TEST JUMPERS
		CAPACITORS
C4	RCBS1H102KBY	50V 1000P
C5	ECBT1H2R2KC5	50V 2.2P
C6	RCBS1H102KBY	50V 1000P
C9	ECEA1HKN010B	50V 1U
C10	ECBT1C332MR5	16V 3300P
C11	RCE1AU101BG	10V 100U
C12	ECFR1C473MR	16V 0.047U
C13	ECFR1C103MR	16V 0.01U
C14	ECBT1C103MS5	16V 0.01U
C15	ECBT1H6R8KC5	50V 6.8P
C16, 17	RCBS1H102KBY	50V 1000P
C18	ECBT1H200JC5	50V 20P
C19	ECBT1H220JC5	50V 22P
C20	RCBS1H102KBY	50V 1000P
C21	ECEA1AKA101B	10V 100U
C22-24	RCBS1H102KBY	50V 1000P
C25	ECBT1H150JC5	50V 15P
C26	ECBT1H6R8KC5	50V 6.8P
C27	ECBT1H4R7KC5	50V 4.7P

Ref. No.	Part No.	Values & Remarks
C28, 29	RCBS1H102KBY	50V 1000P
C31	RCBS1H102KBY	50V 1000P
C32, 33	ECBT1H101KB5	50V 100P
C34	ECBT1H680J5	50V 68P
C35	ECBT1H1R5M5	50V 1.5P
C36, 37	RCBS1H102KBY	50V 1000P
C38	ECBT1H331KB5	50V 330P
C39, 40	ECBT1C103MS5	16V 0.01U
C44	RCE1AU101BG	10V 100U
C47	ECFR1C223MR	16V 0.022U
C48	RCE0JU101BG	6.3V 100U
C51	ECEA1HKA010B	50V 1U
C52	ECFR1C473MR	16V 0.047U
C58	ECBT1H8R2KC5	50V 8.2P
C60	ECEA1AKA220B	10V 22U
C61	ECBT1C332MR5	16V 3300P
C62	RCBS1H102KBY	50V 1000P
C63	ECBA1H681KB5	50V 680P
C64	ECFR1C473MR	16V 0.047U
C65	ECBT1H470J5	50V 47P
C66	ECBT1H100JC5	50V 10P
C67	ECFR1C223MR	16V 0.022U
C68	ECEA1HKA010B	50V 1U
C69, 70	ECFR1C183MR	16V 0.018U
C71	ECEA1HKA2R2B	50V 2.2U
C72	ECEA1HKA010B	50V 1U
C74	ECBT1H471KB5	50V 470P
C75-77	ECEA1HKA010B	50V 1U
C80, 81	ECBT1H331KB5	50V 330P
C82	ECBT1H150JC5	50V 15P
C83	ECBT1H331KB5	50V 330P
C84, 85	ECBT1C103MS5	16V 0.01U
C86	ECBT1H331KB5	50V 330P
C87	ECBT1C103MS5	16V 0.01U
C88	RCBS1H102KBY	50V 1000P
C89	ECBT1H101KB5	50V 100P
C101, 102	ECBT1H471KB5	50V 470P
C103	ECEA0JKA470B	6.3V 47U
C104	ECFR1C183KR	16V 0.018U
C105	ECEA1EKA4R7B	25V 4.7U
C106	ECBT1H471KB5	50V 470P
C107, 108	ECEA1HKA010B	50V 1U
C109, 110	ECEA1EKA4R7B	25V 4.7U
C111	ECBT1H331KB5	50V 330P
C201, 202	ECBT1H471KB5	50V 470P
C203	ECEA0JKA470B	6.3V 47U
C204	ECFR1C183KR	16V 0.018U
C205	ECEA1EKA4R7B	25V 4.7U
C206	ECBT1H471KB5	50V 470P
C207, 208	ECEA1HKA010B	50V 1U
C209, 210	ECEA1EKA4R7B	25V 4.7U
C211	ECBT1H331KB5	50V 330P

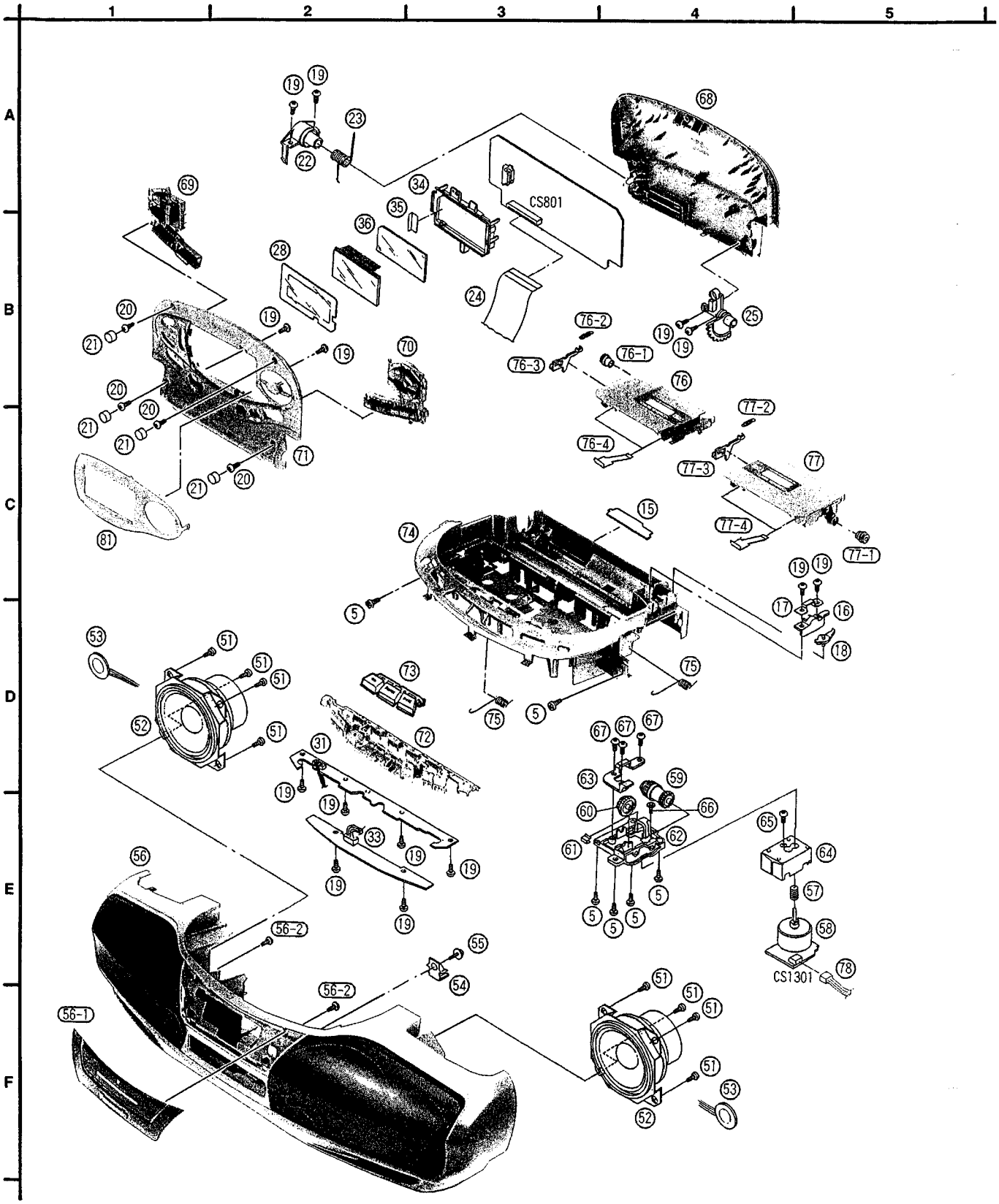
Ref. No.	Part No.	Values & Remarks
C301	ECEA1HN2R2	50V 2.2U
C302, 303	ECBT1C103MS5	16V 0.01U
C304	ECQP2A102JZT	100V 1000P
C305	ECQP2A821JZT	100V 820P
C306	ECQP2A472JZT	100V 4700P
C307	ECEA1HKA010B	50V 1U
C308	RCE1AU101BG	10V 100U
C309	ECQV1H473JM3	50V 0.047U
C310, 311	ECBT1H102KB5	50V 1000P
C312, 313	ECBT1C222MR5	16V 2200P
C314	ECBT1C332MR5	16V 3300P
C315	ECEA0JKA470B	6.3V 47U
C317	ECEA1CKA100B	16V 10U
C318	ECFR1C473MR	16V 0.047U
C319	ECEA1HKA0R1B	50V 0.1U
C320	ECEA1AKA220B	10V 22U
C321	ECEA1AKA101B	10V 100U
C322	ECEA1CKA100B	16V 10U
C323	ECEA0JKA470B	6.3V 47U
C324	ECEA1HKA0R1B	50V 0.1U
C325-327	ECBT1H471KB5	50V 470P
C329	ECEA1AKA470B	10V 47U
C330	ECEA1CKA100B	16V 10U
C331	ECBT1H102KB5	50V 1000P
C333	ECBT1H471KB5	50V 470P
C334	ECEA1CKA100B	16V 10U
C335-337	ECBT1H471KB5	50V 470P
C401, 402	ECEA1CKA100B	16V 10U
C403	ECEA1HKA010B	50V 1U
C404	ECFR1C104KR	16V 0.1U
C405	ECFR1C473KR	16V 0.047U
C406	ECBT0J153MS5	6.3V 0.015U
C407	RCE1HKAR47BG	50V 0.47U
C408	ECFR1C393KR	16V 0.039U
C409	ECEA1HKAR22B	50V 0.22U
C410	ECBT1H101KB5	50V 100P
C411, 412	ECEA1CKA100B	16V 10U
C414	ECFR1C104KR	16V 0.1U
C416	ECEA1EKA4R7B	25V 4.7U
C417	ECBT1H221KB5	50V 220P
C418	ECBT1H471KB5	50V 470P
C421	ECEA1EN220SB	25V 22U
C422	ECEA1CKA100B	16V 10U
C460	RCE1HU2R2BG	50V 2.2U
C461, 462	ECQV1H104JM3	50V 0.1U
C465	ECBT1H102KB5	50V 1000P
C501, 502	ECEA1CKA100B	16V 10U
C503	ECEA1HKA010B	50V 1U
C504	ECFR1C104KR	16V 0.1U
C505	ECFR1C473KR	16V 0.047U
C506	ECBT0J153MS5	6.3V 0.015U
C507	RCE1HKAR47BG	50V 0.47U

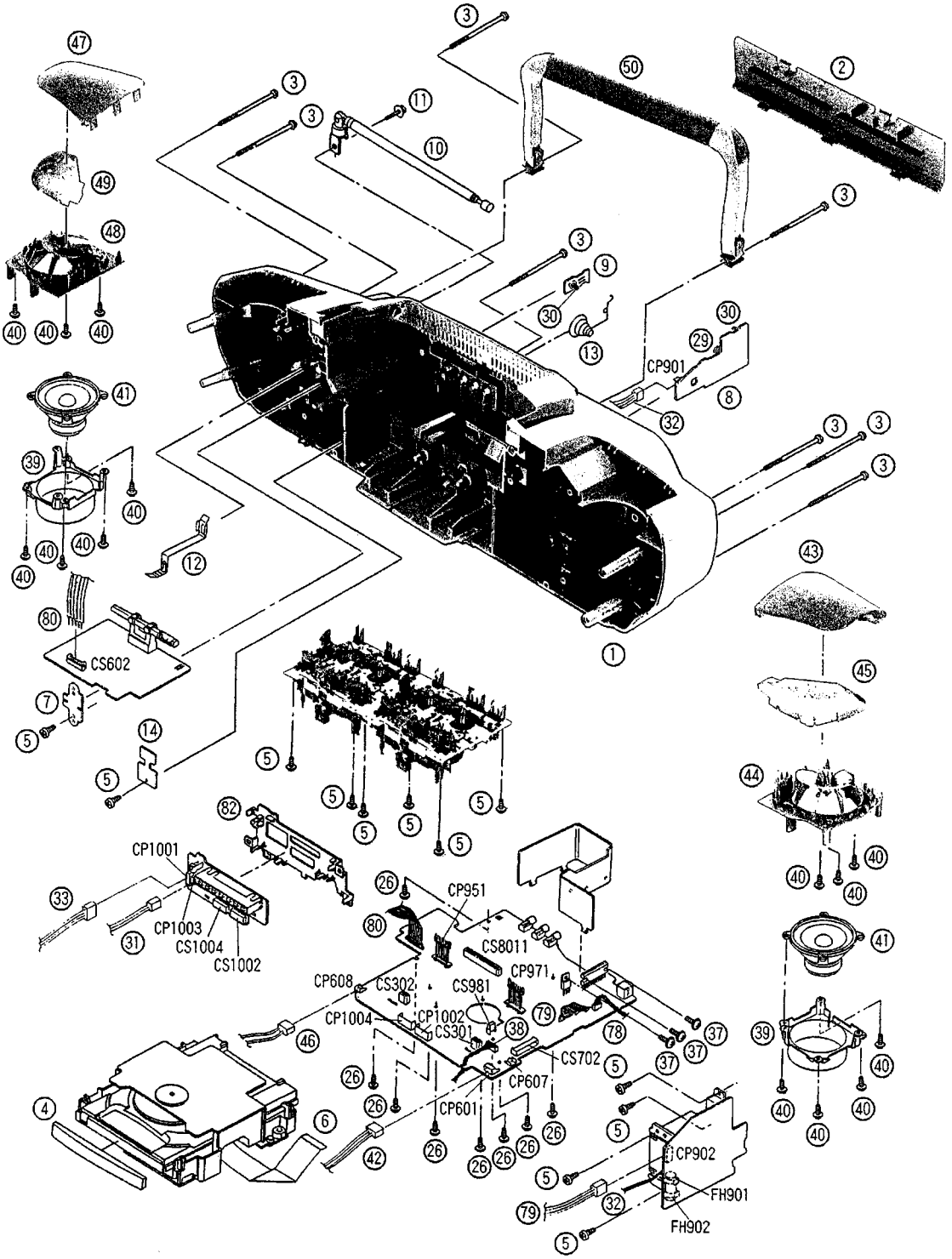
Ref. No.	Part No.	Values & Remarks
C508	ECFR1C563KR	16V 0.056U
C509	ECEA1HKAR22B	50V 0.22U
C510	ECBT1H101KB5	50V 100P
C511, 512	ECEA1CKA100B	16V 10U
C514	ECFR1C104KR	16V 0.1U
C516	ECEA1EKA4R7B	25V 4.7U
C517	ECBT1H221KB5	50V 220P
C518	ECBT1H471KB5	50V 470P
C521	ECEA1EN220SB	25V 22U
C522	ECEA1CKA100B	16V 10U
C560	RCE1HU2R2BG	50V 2.2U
C561, 562	ECQV1H104JM3	50V 0.1U
C565	ECBT1H102KB5	50V 1000P
C601, 602	ECEA1HKA010B	50V 1U
C603	ECBT1H101KB5	50V 100P
C605	ECEA1CKA100B	16V 10U
C606	ECEA1HKA010B	50V 1U
C607	ECEA1CKA100B	16V 10U
C608	RCE0JU101BG	6.3V 100U
C611	ECEA1CKA100B	16V 10U
C612	RCE1AU101BG	10V 100U
C613	ECBT1H471KB5	50V 470P
C614	RCE1AU101BG	10V 100U
C615	ECEA1CKA100B	16V 10U
C616 ⚠	ECA1EM682E	25V 6800U
C617	ECBT1H330J5	50V 33P
C618	RCE1AU101BG	10V 100U
C619, 620	ECEA1CKA100B	16V 10U
C621	ECFR1C273KR	16V 0.027U
C622	ECEA1HKA010B	50V 1U
C623, 624	ECBT1H221KB5	50V 220P
C625	RCE1AU101BG	10V 100U
C627	ECBT1H221KB5	50V 220P
C628	ECEA1CKA100B	16V 10U
C629, 630	ECBT1H102KB5	50V 1000P
C631	ECFR1C103KR	16V 0.01U
C632	ECBT1H102KB5	50V 1000P
C633	RCE0JU101BG	6.3V 100U
C634, 635	ECEA1CKA100B	16V 10U
C636	ECEA1HKA010B	50V 1U
C637	ECEA1CKA100B	16V 10U
C638	ECEA1HKA2R2B	50V 2.2U
C639	ECEA1CKA100B	16V 10U
C640	ECBT1H102KB5	50V 1000P
C642	ECEA1CKA100B	16V 10U
C643, 644	ECEA1HKA010B	50V 1U
C645	ECEA1AKA101B	10V 100U
C646	ECBT1H102KB5	50V 1000P
C648	ECEA1CKA100B	16V 10U
C649	ECBT1H102KB5	50V 1000P
C650	ECBT1C103MS5	16V 0.01U
C675	RCE1CU330BG	16V 33U

Ref. No.	Part No.	Values & Remarks
C676	RCE1CU101BG	16V 100U
C679	ECEA1HKA010B	50V 1U
C690	ECEA1EU470	25V 47U
C701	ECEA0JKA330I	6.3V 33U
C702	ECUZNE104MBN	25V 0.1U
C703	ECEA0JKA101I	6.3V 100U
C704, 705	ECUZNE104MBN	25V 0.1U
C706	ECUV1H272KBN	50V 2700P
C707	ECUV1E273KBN	25V 0.027U
C708	ECUE1H472KBN	50V 4700P
C709	ECUE1C473KBN	16V 0.047U
C710	ECUV1H182KBN	50V 1800P
C711, 712	ECUWNE104ZFN	25V 0.1U
C713	ECUV1C104MBM	16V 0.1U
C714	ECEA0JKA101I	6.3V 100U
C716	ECUE1H561KBN	50V 560P
C717	ECUWNE104ZFN	25V 0.1U
C718	ECUVNC224KBN	16V 0.22U
C721, 722	ECUV1H150JCN	50V 15P
C723	ECEA1AKA221I	10V 220U
C724	ECUV1C104MBM	16V 0.1U
C725, 726	ECUE1H102KBN	50V 1000P
C727, 728	ECEA1HPK010I	50V 1U
C730	ECUWNE104ZFN	25V 0.1U
C731, 732	ECEA0JKA221I	6.3V 220U
C733	ECUZNE104MBN	25V 0.1U
C734	ECEA1AKA221I	10V 220U
C735-737	ECUWNE104ZFN	25V 0.1U
C738	ECUV1C154KBN	16V 0.15U
C742	ECUV1E273KBN	25V 0.027U
C743	ECUWNE104ZFN	25V 0.1U
C744	ECUE1E822KBN	25V 8200P
C745	ECUE1C473KBN	16V 0.047U
C747	ECUE1H222KBN	50V 2200P
C748	ECUV1H471KBM	50V 470P
C749	ECUZNE104MBN	25V 0.1U
C750	ECUV1C104MBM	16V 0.1U
C751	ECUZNE104MBN	25V 0.1U
C752	ECUE1H152KBN	50V 1500P
C753	ECUV1H471KBM	50V 470P
C754	ECUE1H471KBN	50V 470P
C790	ECA1AKF820E	10V 82U
C801-803	ECBT1H102KB5	50V 1000P
C804	ECEA0JKS101B	6.3V 100U
C805	ECBT1H102KB5	50V 1000P
C806	ECBT1C103MS5	16V 0.01U
C807	ECBT1H270J5	50V 27P
C808	ECBT1H470J5	50V 47P
C809	ECBT1H220JC5	50V 22P
C810	ECBT1H470J5	50V 47P
C811, 812	ECBT1C103MS5	16V 0.01U
C813	ECBT1H180JC5	50V 18P

Ref. No.	Part No.	Values & Remarks
C814	ECBT1H220JC5	50V 22P
C815-818	ECBT1H561KB5	50V 560P
C821	ECEA0JKA470B	6.3V 47U
C824	ECBT1C103MS5	16V 0.01U
C827-830	ECBT1H561KB5	50V 560P
C901-904	ECQV1H104JM3	50V 0.1U
C905	ECQV1H124JM3	50V 0.12U
C1001	ECEA1HKA2R2B	50V 2.2U
C1002	RCE1AU101BG	10V 100U
C1004	ECBT1H221KB5	50V 220P
C1005	ECFR1C104MR	16V 0.1U
C1301	ECEA1CU100	16V 10U

■ Cabinet Parts Location




CS602
CP1001
CP1003
CS1004
CS1002
CP951
CS8011
CP971
CP608
CS302
CS981
CP1004
CP1002
CS301
CS702
CP607
CP601
CP902
FH901
FH902
CP901

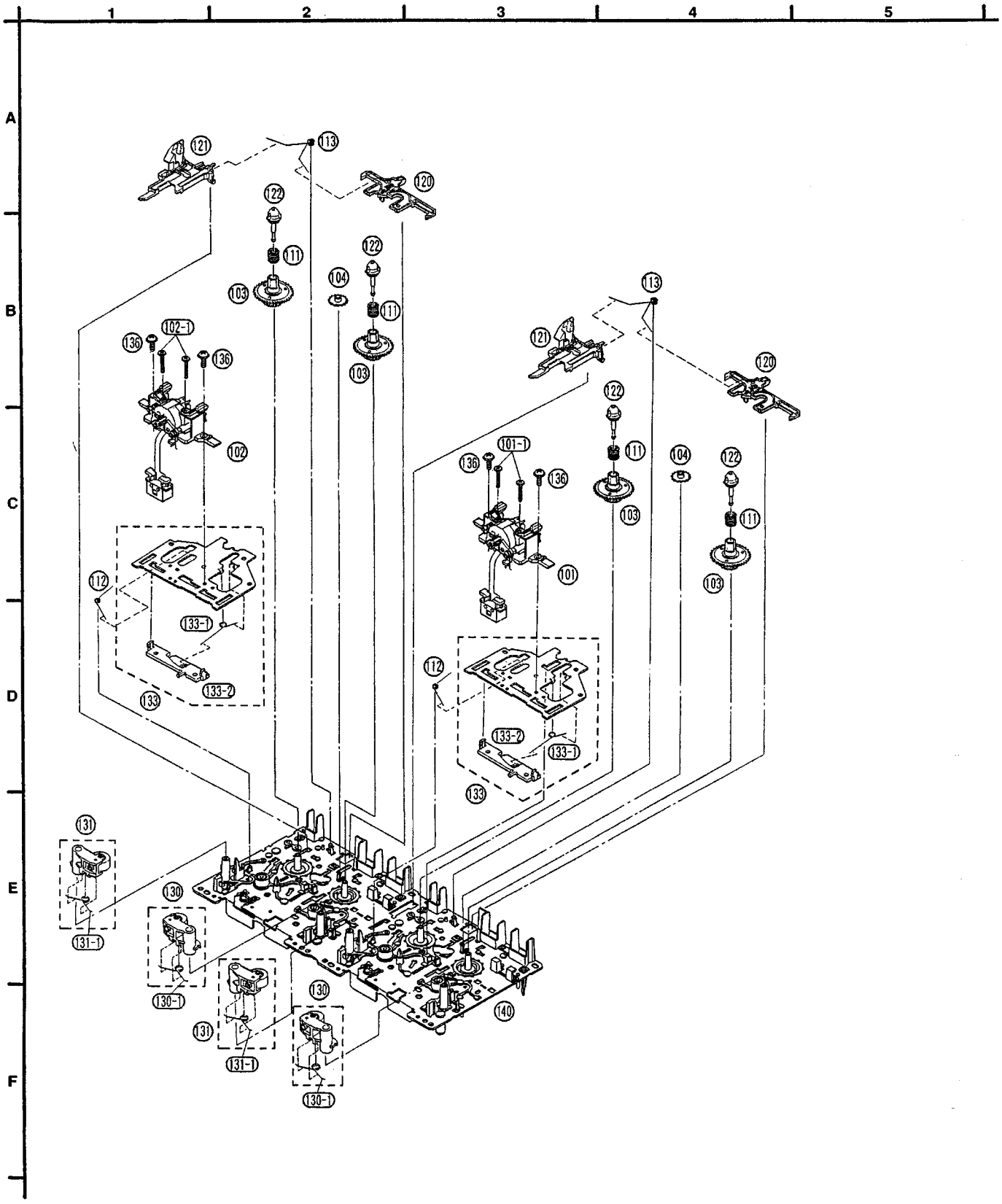
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKS0223C-K	REAR CABINET	[EG]
1	RKS0223D-K	REAR CABINET	[EB]
2	RKK0041-K	BATTERY COVER	
3	XTN3+40G	SCREW	
4	RGK0496-1K	CD ORNAMENT PLATE	
5	XTV3+12G	SCREW	
6	REE0685	FFC	
7	REQ0156	SPACER	
8	REQ0161A	BATT. PCB (MAIN)	
9	REQ0162	BATT. PCB (BACK-UP)	
10	XEARR175ED-Y	ROD ANTENNA	
11	XYN3+F12FY	SCREW	
12	RJR0158	ANT. TERMINAL	
13	RJC91005	BATT. TERMINAL	
14	REQ0159	SPACER	
15	REQ0154	SPACER	
16	RDB0057	HOLDER	
17	RMC0252	SPRING	
18	RMR0699-K	LOCK PIECE	
19	XTV26+8G	SCREW	
20	XTN26+8GFZ	SCREW	
21	RMG0249-K1	RUBBER	
22	RDB0063-1	SHAFT	
23	RMB0488	SPRING	
24	REE0680	FFC	
25	RMS0330	GEAR	
26	XTBS26+10J	SCREW	
28	RGP0517A-Q	LCD PANEL	
29	RJC511YB	BATTERY TERMINAL (MAIN)	
30	RJC751ZA	BATTERY TERMINAL (BACK-UP)	
31	REX0809Y	WIRE ASS'Y (CW1003/5P)	
32	REX0807	WIRE ASS'Y (CW901/3P)	
33	REX0806Y	WIRE ASS'Y (CW1001/6P)	
34	RMN0362	HOLDER	
35	RDL0034	FILTER	
36	RGL0259-Q	LIGHT PANEL	
37	XTV3+10F	SCREW	
38	REX0617Y	WIRE ASS'Y (CW790/6P)	
39	RMN0360	COVER	
40	XTN26+8GFZ	SCREW	
41	EAS8PH339B6	SPEAKER (MID)	
42	REX0785	WIRE ASS'Y	
43	RGK0782-K	SP. ORNAMENT (R) 1	
44	RGK0784-K	SP. ORNAMENT (R) 2	
45	RGM0111-K	NET (R)	
46	REX0805	WIRE ASS'y	
47	RGK0781-K	SP. ORNAMENT (L) 1	
48	RGK0783-K	SP. ORNAMENT (L) 2	
49	RGM0110-K	NET (L)	

Ref. No.	Part No.	Part Name & Description	Remarks
50	RYH0020-K	HANDEL	
51	XTV3+10G	SCREW	
52	EAS10P372A6	SPEAKER (WOOFER)	
53	EFBS55C41A6	TWEETER	
54	REX0786	WIRE ASS'Y	
55	RHD30044	SCREW	
56	RYK0601-K	FRONT CABINET ASS'Y	
56-1	RFKNXED90-K	PANEL ASS'Y	
56-2	XTV26+8G	SCREW	
57	RDG0250A	GEAR	
58	RFKPXDT07-K	MOTOR ASS'Y	
59	RFKNXDT07-K	GEAR ASS'Y	
60	RDG0289	GEAR	
61	RMC0253	CLIP	
62	RMK0261	CHASSIS	
63	RMR0801-W	ANGLE	
64	RSC0387	SHIELD CASE	
65	XQN2+C3	SCREW	
66	XQN2+C6	SCREW	
67	XTV26+12F	SCREW	
68	RKF0456-K	REAR CABINET (DISPLAY)	
69	RGU1328A-K	BUTTON, TAPE EDIT	
70	RGU1329A-K	BUTTON, TIMER ADJ.	
71	RKF0466A-K	FRONT CABINET (DISPLAY)	
72	RGU1297A-K	BUTTON, FUNCTION 1	
73	RGU1316A-Q	BUTTON, FUNCTION 2	
74	RKQ0189A-K	TOP CABINET	
75	RME0193	SPRING	
76	RYF0368-K1	CASSETTE HOLDER (L) ASS'Y	
76-1	RDG0183	GEAR	
76-2	RMB0448	SPRING	
76-3	RMM0147	ROD	
76-4	RUS757ZA	SPRING	
77	RYF0369-K1	CASSETTE HOLDER (R) ASS'Y	
77-1	RDG0183	GEAR	
77-2	RMB0448	SPRING	
77-3	RMM0147	ROD	
77-4	RUS757ZA	SPRING	
78	REX0814Y	WIRE ASS'Y (CW1301/4P)	
79	REX0789	WIRE ASS'Y (PW902/6P)	
80	RWJ1110260XX	FLAT CABLE (PW602/10P)	
81	RGK0779-K	ORNAMENT	
82	RMK0307	CHASSIS	

Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS	
102	REDO037	HEAD BLOCK(R/P)	
102	REDO038	HEAD BLOCK(P.B)	
102-1	RHD17015	SCREW	
103	RDGO300	REEL TABLE ASS'Y	
104	RDGO301	GEAR	
105	RDKO026	GEAR	
106	RDRO029	PULLEY	
107	RDVO033-1	BELT 1	
108	RDVO034	BELT 2	
109	RDVO035	BELT 3	
110	RUW147ZA	SPRING	
111	RMBO400	SPRING	
112	RMBO403	SPRING	
113	RMBO404	SPRING	
114	RMBO406	SPRING	
115	RMBO408	SPRING	
116	RMLO370	LEVER	
117	RMLO371	LEVER	
118	RMLO372	LEVER	
119	RMLO374	LEVER	
120	RMMO131	ROD	
121	RMMO133	ROD	
122	RMQO519	REEL CAP	
123	RMSO398-1	SHAFT	
124	RSJO003	PLUNGER ASS'Y	
125	RUS609ZC	SPRING	
126	RXFO049	FLYWHEEEL ASS'Y	
127	RXFO050	FLYWHEEEL ASS'Y	
128	RXGO040	GEAR	
129	RMKO283	SUB CHASSIS	
130	RXLO124	PINCH ROLLER ASS'Y	
130-1	RMBO401	SPRING	
131	RXLO125	PINCH ROLLER ASS'Y	
131-1	RMBO402	SPRING	
132	RXLO126	ARM	
133	RXQO412	CHASSIS ASS'Y	
133-1	RMBO405	SPRING	
133-2	RMMO132	ROD	
134	REMO055	MOTOR ASS'Y	
135	RHD26022	SCREW	
136	XTW2+5L	SCREW	
137	XTW26+10S	SCREW	
138	XYC2+JF17	SCREW	
139	RWJ4704050CK	FLAT CABLE(W981)	
140	RFKJXED70-K	MAIN CHASSIS ASS'Y	

Ref. No.	Part No.	Part Name & Description	Remarks
		LOADING UNIT	
301	RFKJXDT07-K	ROADING CHASSIS ASS'Y	
301-1	RDGO142	GEAR	
301-2	RDGO193	GEAR	
301-3	RDPO065	PULLY	
302	REMO019	MOTOR	
303	RMKD255	BELT COVER	
304	RGQO144-K	DISC TRAY	
305 ⚠	RAE0150Z	TRAVERSE DECK	
305-1	SHGD113-1	RUBBER(A)	
305-2	SNSD38	SCREW	
306	RMSO350	PIN(B)	
307	RMSO123-1	PIN(A)	
308	RMEO109	SPRING(A)	
309	RMEO142	SPRING(B)	
310	RMRO698-K	TRAVERSE CHASSIS	
311	XTV2+6G	SCREW	
312	RMEO063	SPRING	
313	RMMO079-1	SLIDE PLATE(A)	
314	RMLO178-1	LEVER	
315	RFKNLPG440-K	GEAR ASS'Y(B)	
316	RHD20009-1	SCREW	
317	RMEO087	SPRING	
318	RMLO349	LEVER	
319	RMMO059-1	SLIDE PLATE(B)	
320	RMRO334	HOLDER	
321	RHM245ZA	MAGNET	
322	RXQO380	MAGNET HOLDER	
323	XTN26+6G	SCREW	
324	RMAO793	CLAMPER	
325	XYN2+F6FZ	SCREW	
326	RMGO158	BELT	
327	XTN26+6G	SCREW	

■ Mechanism Parts Location



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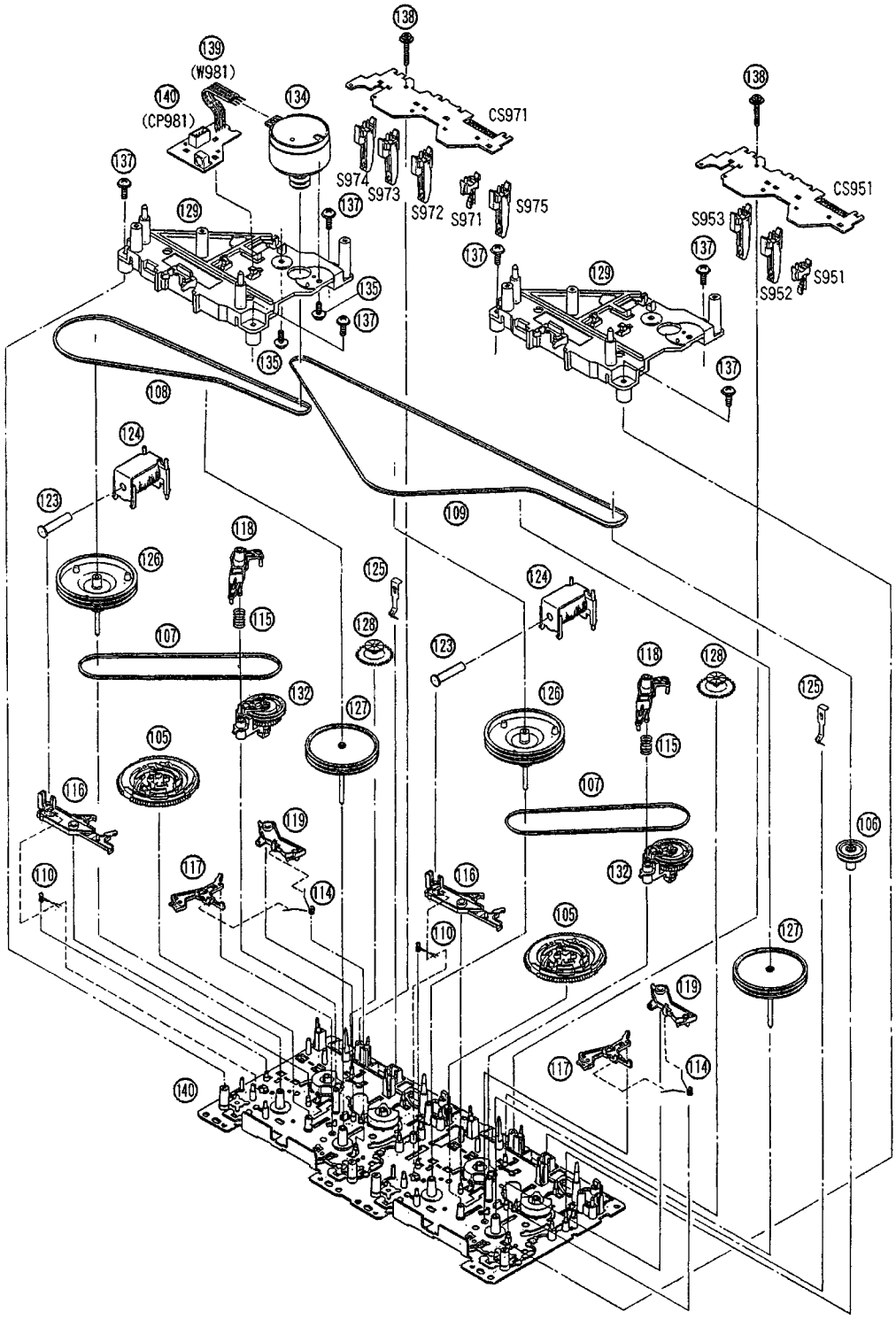
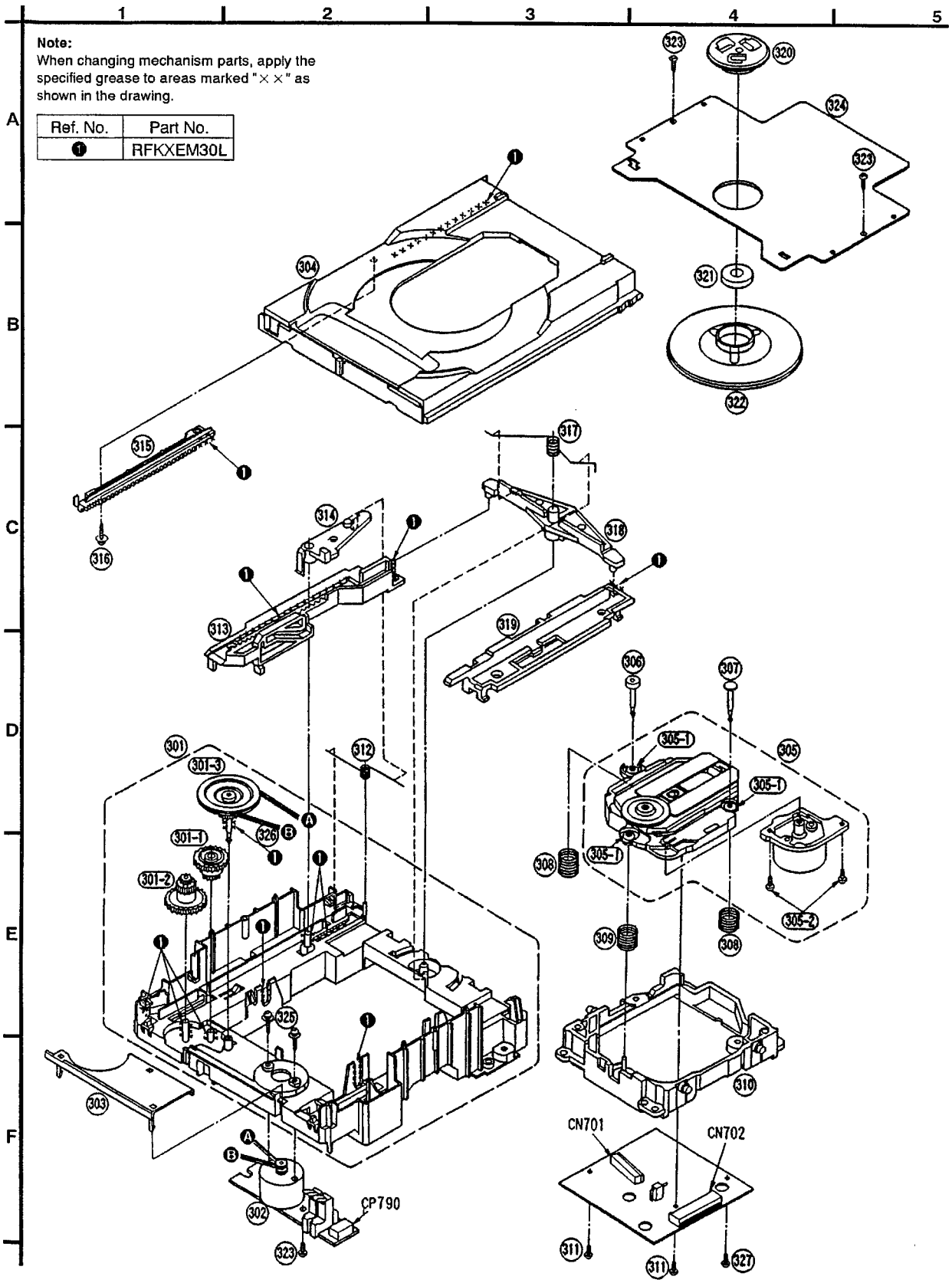
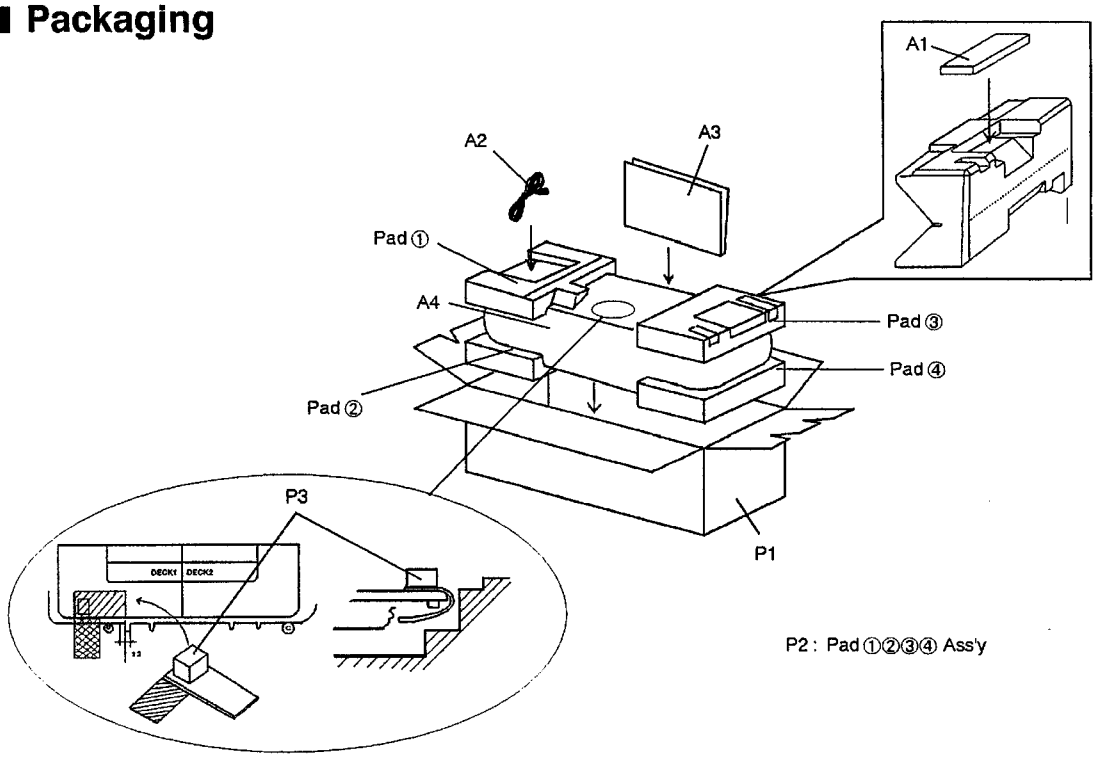

(W981)
(CP981)
CS971
CS951
S974
S973
S972
S971
S975
S953
S952
S951

■ Loading Unit Parts Location



■ Packaging



Note: The reference number SA represent the grease and tool used for this unit.

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIALS	
P1	RPG2834	GIFT BOX	[EG]
P1	RPG2835	GIFT BOX	[EB]
P2	RPNO932-1	PAD	
P3	RPQ0621	SPACER	
P4	RPHD099	SHEET	

Ref. No.	Part No.	Part Name & Description	Remarks
		ACCESSORIES	
A1	RAK-RX416WH	REMOTE CONTROLLER	
A1-1	RKK0080-K	BATTERY COVER	
A2	RJA0019-2K	AC POWER CORD	[EG] ⚠
A2	VJA0733	AC POWER CORD	[EB] ⚠<VRD>
A3	RQT3468-B	INSTRUCTION MANUAL	[EB]
A3	RFKSXED90EGK	INSTRUCTION MANUAL ASS'Y	[EG]
		JIG/TOOL	
SA1	QZZCWAT	TEST TAPE(TAPE SPEED etc)	
SA2	QZZCFM	TEST TAPE(AZIMUTH/FREQ.)	
SA3	RFKXEM30L	GREASE(CD MECHANISM)	

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